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TRANSACTIONS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

VOL. VI.

FOR THE YEAR 1893.

PHILADELPHIA:
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1894.

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AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

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NOTE.

THE Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

WILLIAM WARREN POTTER, *Secretary*,
284 FRANKLIN STREET, BUFFALO.

[MINUTES and discussions reported stenographically by WILLIAM WHITFORD, M.D., Chicago, Ill.]

LIST OF ILLUSTRATIONS.

PAGE

Extra-uterine Pregnancy. (GEORGE S. PECK, M.D.)

Specimen of right tube and ovary 118

Case of Mrs. W. P. . . . . *facing* 123

Case of Mrs. G. W. . . . . " 124

Murphy Button in Anastomotic Operations. (C. A. L. REED, M.D.)

Fig. 1. The Murphy button closed 159

Figs. 2, 3. The Murphy button open 159

Discussion on the Management of the Abdominal Incision. (JAMES F. W. ROSS, M.D.) . . . . . *facing* 211

Endoscopic Tubes for Direct Inspection of the Interior of the Bladder and Uterus. (ROBERT T. MORRIS, M.D.) . . . *facing* 275

Suppurative Appendicitis. (L. H. LAIDLEY, M.D.) . . " 296

George Jackson Fisher, A.M., M.D. . . . . " 299

CONTENTS.

	PAGE
Constitution	3
By-laws	5
Officers for 1893–94	9
List of Honorary Fellows	11
List of Corresponding Fellows	15
List of Ordinary Fellows	17
Minutes of the Sixth Annual Meeting	31
The President's Annual Address. The Present Position of Pelvic Surgery. By L. S. McMurtry, M.D.	43
Intra-uterine Asphyxia: with Report of Three Cases. By George F. Hulbert, M.D.	53
A Study of the Pathology of Placenta Previa. By W. H. Wenning, M.D.	67
The Care of Pregnant Women. By John Milton Duff, M.D.	89
Dilatation of the Cervix for Dysmenorrhea. By Edmund M. Pond, M.D.	97
Extra-uterine Pregnancy: with Report of Cases. By George S. Peck, M.D.	114
The Nature of Shock, and its Management. By Eugene Boise, M.D.	129
A Contribution to the Surgical Pathology of the Gall-bladder and Ducts. By Walter P. Manton, M.D.	142
A Few Practical Notes on the Establishment of Anastomosis between the Gall-bladder and Intestines for Obstruction of the Common Duct. By James F. W. Ross, M.D.	146
What are the Indications for Abdominal Section in Intra-pelvic Hemorrhage? By M. Rosenwasser, M.D.	163
A Plea for Better Surgery in the Closure of the Abdominal Incision. By H. W. Longyear, M.D.	182
Management of the Abdominal Incision. By Charles A. L. Reed, M.D.	202
Central Laceration of the Perineum: Causation and Prevention. By J. C. Sexton, M.D.	224
Pregnancy following a Partial Supra-pubic Hysterectomy, Complicated by Hemorrhage through the Abdominal Cicatrix. By X. O. Werder, M.D.	235
The Legal Question in Operations on the Insane. By Walter P. Manton, M.D.	245

PAGE

Further Observations on the Relation of Pelvic Disease and Psychical Disturbances in Women. By GEORGE H. ROHÉ, M.D. . . 249

Puerperal Eclampsia: its Causation and Treatment. By AUGUSTUS P. CLARKE, M.D. 265

Endoscopic Tubes for Direct Inspection of the Interior of the Bladder and Uterus. By ROBERT T. MORRIS, M.D. 275

Vaginal Hysterectomy for Malignant Disease of the Uterus: with a Tabulated Report of Cases. By RUFUS B. HALL, M.D. . . 278

Pelvic Abscess—Laparatomy: Twenty Cases. By I. S. STONE, M.D. 283

In Memoriam:

George Jackson Fisher, A.M., M.D. By WILLIAM WARREN POTTER, M.D. 299

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, and Corresponding Fellows.

The Ordinary Fellows shall not exceed one hundred and twenty-five in number.[1]

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council one month before the first day of meeting by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

[1] According to an amendment passed June 2, 1893.

Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council, and elected by the Association.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual *Transactions*.

They shall pay an entrance fee of twenty-five dollars.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and five Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall be determined by the Association each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting, *provided* that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding; and *provided further*, that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence one of the Vice-Presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the *Transactions* under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members, may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A.M.
   - *a.* Reports of Committees on Scientific Questions.
   - *b.* Reading of Papers and Discussion of the same.
2. The Business meeting shall be held at half-past eight o'clock P.M. on the second day of the session (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. The Secretary's Record shall then be read; the Treasurer's Accounts submitted; the Reports of Committees on other than scientific subjects offered; and all Miscellaneous Business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow on admission shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay in advance the sum of twenty dollars annually thereafter.

Any Fellow neglecting to pay his annual dues for two years shall forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive annually a draft from the President drawn on the Treasurer for a sum, to be fixed at each annual meeting, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for three consecutive years may, unless he offer a satisfactory excuse, be dropped from fellowship upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

AMENDMENTS.

XII. These By-laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

OFFICERS FOR 1893–1894.

PRESIDENT.

GEORGE HENRY ROHÉ, Catonsville.

VICE-PRESIDENTS.

WALTER PORTER MANTON, Detroit.
GEORGE FREDERICK HULBERT, St. Louis.

SECRETARY.

WILLIAM WARREN POTTER, Buffalo.

TREASURER.

XAVIER OSWALD WERDER, Pittsburg.

EXECUTIVE COUNCIL.

CHARLES ALFRED LEE REED, Cincinnati.
JAMES FREDERICK WILLIAM ROSS, Toronto.
WILLIAM WOTKYNS SEYMOUR, Troy.
JOSEPH PRICE, Philadelphia.
JOHN CHASE SEXTON, Rushville.

HONORARY FELLOWS.

* Deceased.

1889.—Bantock, George Granville, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. 12 Granville Place, Portman Square, W., London, England.

1889.—Barbour, A. H. F., M.A., B.S.C., M.D., F.R.C.P.E., F.R.S.E. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 28 Melville Crescent, Edinburgh, Scotland.

1892.—Boislinière, L. Ch., A.B., M.D., LL.D. Emeritus Professor of Obstetrics in the St. Louis Medical College; Consulting Obstetrician to the St. Ann Lying-in Asylum and St. Louis Female Hospital; late President St. Louis Obstetrical and Gynecological Society, and late President St. Louis Medical Society; Member of St. Louis Academy of Science and of the Paris (France) Anthropological Society. 2303 Chestnut Street, St. Louis, Missouri.

1890.—Championnière, Just. Lucas-, M.D. 3 Avenue Montaigne, Paris, France.

1889.—Charpentier, Arthur Louis Alphonse, M.D. Fellow of the Faculty of Medicine of Paris; Member of the Academy of Medicine; and Chevalier of the Legion of Honor. 66 Rue de Miromesnil, Paris, France.

1888.—Cordes, August Elisée, M.D. Member of the Royal College of Physicians, London; Fellow of the Obstetrical Society of London, and of the British Gynecological Society; Corresponding National Member of the Obstetrical and Gynecological Society of Paris; Honorary Fellow of the Detroit Gynecological Society; late "Chirurgien-adjoint" of the Obstetrical and Gynecological Clinic at

the Maternity of Geneva; Consulting Accoucheur of the Miséricorde Hospital, etc.; Perpetual Member of the Société Obstétricale de France, Paris, France. 12 Rue Bellot, Geneva, Switzerland.

1890.—Corson, Hiram, M.D. Honorary Member of the Harrisburg (Pa.) Pathological Society; Associate Member of Philadelphia Obstetrical Society; Associate Fellow of the College of Physicians of Philadelphia, and Permanent Member (President, 1852) of the Pennsylvania Medical Society, and of the American Medical Association. Maple Hill, Plymouth Meeting, Pa.

1889.—Croom, J. Halliday, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. Physician to and Clinical Lecturer on Diseases of Women, Royal Infirmary, Edinburgh; Physician to the Royal Maternity Hospital; Lecturer on Midwifery and the Diseases of Women at the School of Medicine; Consulting Physician for Diseases of Women, Western Dispensary. 25 Charlotte Square, Edinburgh, Scotland.

1889.—Dunlap, Alexander, A.M., M.D. Honorary Fellow of the American Gynecological Society; Member (Vice-President, 1878) of the American Medical Association. Springfield, O.

1888.—Edis, Arthur Wellesley, M.D. Lond., F.R.C.S., M.R.C.S. Senior Physician to the Chelsea Hospital for Women; late Obstetric Physician to the Middlesex Hospital, and Lecturer on Midwifery to the Medical School; late President of the British Gynecological Society, and Vice-President of the Obstetrical Society of London; Corresponding Fellow of the Gynecological Society of Boston, U.S.; Consulting Obstetric Physician to the City Provident Dispensary, and Hounslow College Hospital. 22 Wimpole Street, London, England.

1889.—Eklund, Abraham Fredrik, M.D. 3. A. Sibyllegatan, Stockholm, Sweden.

1891.—Fernandez, Juan Santos, M.D. Calle de la Reina, No. 92, Havana, Cuba.

1891.—*Fisher, George Jackson, A.M., M.D. Sing Sing, N. Y. 1893.

1889.—Freund, William Alexander, M.D. Professor and Director of the Clinic for Diseases of Women, in the Emperor William University. 2 Nikolaustaden, Strassburg, Germany.

1892.—Green, Traill, M.D., LL.D. Emeritus Professor of Chemistry in Lafayette College; Member of the American Medical Asso-

ciation; Member (President, 1867) of the Medical Society of the State of Pennsylvania; Fellow of the American Association for the Advancement of Science; Member of the American Philosophical Society; President of the Section of Therapeutics and Materia Medica, Ninth International Medical Congress; Consulting Physician to St. Luke's Hospital, Bethlehem; Physician to the Home for Friendless Children, Easton; Consulting Surgeon to Easton Hospital; Ex-President of the American Academy of Medicine. 222 Spring Garden St., Easton, Pa.

1889.—Keith, Thomas, M.D. 42 Charles Street, Berkeley Square W., London, England.

1889.—Leopold, G., M.D. Professor in the Royal Clinic for Diseases of Women. 12 Seminar-Strasse, Dresden, Germany.

1890.—Martin, August, M.D. N. W. Alexander Ufer 1, Berlin, Germany.

1891.—Moses, Gratz Ashe, M.D. Emeritus Professor of Obstetrics and Gynecology in the Missouri Medical College; formerly in charge of the Woman's Department, St. Louis Hospital, and Clinical Lecturer in Gynecology, St. Louis Medical College; Physician to Augusta Hospital. 3941 West Bell Place, St. Louis, Mo.

1889.—Nicolaysen, Julius, M.D. Professor of Surgery in the University of Norway. Christiania, Norway.

1891.—Pietranera, E., M.D. Professor of Obstetrics in the Medical Department of the National University. Cordova, Argentine Republic, S. A.

1891.—Rodriguez, Juan M., M.D. Professor of Clinical Obstetrics in the Medical School of the University of Mexico. Mexico.

1889.—Sänger, Max, M.D. Professor of Obstetrics and Gynecology, University of Leipzig; late President of the Leipzig Obstetrical Society; Honorary Member of the Obstetrical Societies of Philadelphia and Chicago; Honorary Member of the Belgian Gynecological Society, Brussels; Honorary Member of the Gynecological Society, Kiew; Corresponding Member of the Medical Society of Christiania, Norway. 16 Lindenstrasse, Leipzig, Germany.

1890.—Savage, Thomas, M.D., F.R.C.S. Eng. Surgeon to the Birmingham Hospital for Women. 33 Newhall Street, Birmingham, England.

1889.—Schultze, Bernhard Sigmund, M.D. Professsor of Gynecology; Director of the Lying-in Institute, and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

1888.—Smith, J. Greig, M.A., C.M., M.B., F.R.S.E. Surgeon to the Bristol Royal Infirmary; Lecturer on Surgery, Bristol Medical School; late Examiner in Surgery, University of Aberdeen, Scotland. 16 Victoria Square, Clifton, Bristol, England.

1888.—Tait, Lawson, M.D., LL.D., F.R.C.S.E. Surgeon to the Birmingham and Midland Hospital for Women; Consulting Surgeon to the West Bromwich, the Southampton, and the Nottingham Hospitals for Women; Professor of Gynecology and Member of the Council in Queen's College; President of Mason's Science College; Ex-President of the British Gynecological Society; President of the Birmingham Medical Institute; Ex-President of the Birmingham and Midland Counties Branch of the British Medical Association; President of the Worcestershire and Herefordshire Branch of the British Medical Association, and of the Midland Medical Society. 7 The Crecent, Birmingham, England.

1888.—Williams, John, M.D., F.R.C.P. 63 Brook Street, Grosvenor Square, W., London, England.

1889.—v. Winckel, F., M.D. Professor of Gynecology and Director of the Royal Hospital for Women; Member of the Supreme Council, and of the Faculty of Medicine in the University of Munich. 16a Sonnenstrasse, Munich, Germany.

Total, twenty-eight Honorary Fellows.

CORRESPONDING FELLOWS.

1891.—Griffin, Herbert Spohn, B.A., M.D. Surgeon to Hamilton City Hospital; Examiner in Obstetrics, University of Toronto, 157 Main Street, Hamilton, Ontario, Canada.

1891.—Machell, Henry Thomas, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Woman's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children, and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto. Ontario, Canada.

Total, two Corresponding Fellows.

ORDINARY FELLOWS.

* Resigned. † Deceased.

Founder.—*Allen, Henry Bigelow, M.D. 1892.

1893.—Armstrong, Oscar Samuel, M.D. Professor of Gynecology, Michigan College of Medicine and Surgery, Detroit; Gynecologist to Emergency Hospital; President of Wayne County Medical Society, 1893; Member of the American Medical Association; Member of the Michigan State Medical Society; Member of the Michigan Surgical and Pathological Society; Associate Editor of the *Emergency Hospital Reports.* 399 Third Avenue, Detroit, Mich.

1890.—Asdale, William J., M.D. Professor of Diseases of Women, Western Pennsylvania Medical College; Medical Department University of Western Pennsylvania. 2107 Penn Avenue. Pittsburg, Pa.

1892.—Ashton, William Easterly, M.D. Professor of Gynecology in the Medico-Chirurgical College, Gynecologist to the Medico-Chirurgical Hospital, and to the Philadelphia Hospital. 2011 Walnut Street, Philadelphia, Pa.

Founder.—Baker, Washington H., M.D. Senior Obstetrician to the Maternity Hospital; Physician to the German Hospital. 1610 Summer Street, Philadelphia, Pa.

Founder.—Banta, Rollin Ledrue, M.D. Professor of Materia Medica and Therapeutics, Niagara University Medical College; Consulting Obstetrician to the Sisters of Charity and Woman's Hospitals; President of the Buffalo Obstetrical Society, 1887–'88. *Vice-President,* 1890. *Executive Council,* 1891. 358 South Division Street, Buffalo, N. Y.

1889.—Barrow, David, M.D. 196 East High Street, Lexington, Kentucky.

Founder.—*Beckwith, Frank E., M.D. New Haven, Conn. 1892.

1890.—Bernardy, Eugene Prosper, M.D. 221 South Seventeenth Street, Philadelphia, Pa.

1892.—Blume, Frederick, M.D. Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to the Mercy Hospital; Physician to the Pittsburg Free Dispensary; President of the Pittsburg Obstetrical Society. 118 Liberty Street, Allegheny, Pa.

1890.—Bond, Young Hance, M.D. Professor of Gynecology, Marion-Sims College of Medicine; Consulting Gynecologist to the St. Louis City and to the St. Louis Female Hospitals. 914 North Grand Avenue, St. Louis, Mo.

1893.—Boise, Eugene, A.B., M.D. Gynecologist to St. Mark's Hospital. 23 North Lafayette Street, Grand Rapids, Mich.

Founder.—Boyd, James Peter, A.M., M.D. Professor of Obstetrics, Gynecology, and Diseases of Children in the Albany Medical College; Gynecologist to the Albany Hospital; Consulting Obstetric Surgeon to St. Peter's Hospital; Fellow of the British Gynecological Society. 152 Washington Avenue, Albany, N. Y.

1889.—Branham, Joseph H., M.D. Demonstrator of Anatomy, College of Physicians and Surgeons; Visiting Surgeon to Bayview Hospital. 538 North Arlington Avenue, Baltimore, Md.

1889.—†Burns, Bernard, M.D. Allegheny, Pa. 1892.

1891.—Cameron, Irving Heward, M.B. Professor of Clinical Surgery, University of Toronto; Surgeon to the Toronto General Hospital, to the Hospital for Sick Children, and the St. John's Hospital for Diseases of Women. 307 Sherbourne Street, Toronto, Ont., Canada.

Founder.—*Carson, Norman Bruce, M.D. St. Louis, Mo. 1893.

Founder.—Carstens, J. Henry, M.D. Professor of Obstetrics and Clinical Gynecology, Detroit College of Medicine: Gynecologist to Harper Hospital; Attending Physician to the Woman's Hospital; Obstetrician to the House of Providence; President of the Detroit Gynecological Society, 1892. *Vice-President*, 1888–'89. 21 Macomb Street, Detroit, Michigan.

Founder.—Clarke, Augustus Peck, A.M., M.D. President of the Gynecological Society of Boston, 1892; Vice-President of the Pan-American Medical Congress, 1893; Member of the Massachusetts Medical Society; Fellow of the American Academy of Medicine; Member of the American Public Health Association; Member of the American Medical Association; Consulting Physician to the Middlesex Hospital and Dispensary. 693 Main Street, Cambridge, Mass.

1890.—†Coles, Walter, M.D. St. Louis, Mo. 1892.

1889.—Conklin, William Judkins, A.M., M.D. Visiting Surgeon to St. Elizabeth's Hospital; President of the Medical Society of the State of Ohio, 1891. 17 East First Street, Dayton, Ohio.

1892.—Cordier, Albert Hawes, M.D. Clinical Lecturer on Gynecology in the Kansas City Medical College; Gynecologist to All Saints' Hospital; Corresponding Member of the Philadelphia Obstetrical Society. 1024 Walnut Street, Kansas City, Mo.

Founder.—Cushing, Clinton, M.D. Professor of Gynecology in Cooper Medical College; Consulting Surgeon to the French Hospital. *Executive Council*, 1888–'91. 636 Sutter Street, San Francisco, Cal.

1892.—Cushing, Ernest Watson, A.B., M.D. Surgeon of the Woman's Charity Club Hospital; Editor of the "Annals of Gynecology and Pediatry." 168 Newbury Street, Boston, Mass.

1889.—Davis, William Elias B., M.D. Secretary of the Southern Surgical and Gynecological Association, 1888–'94; formerly Surgeon to the Birmingham Hospital of United Charities; President of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, 1892; Secretary of the Surgical Section of the American Medical Association, 1891; Honorary Member of the Medical Society of the State of New York. 1806 Third Avenue, Birmingham, Ala.

1889.—Dean, George R., A.B., M.D. 6 South Church Street, Spartanburg, S. C.

1892.—Dewees, William B., M.A., M.D. Vice-President of the Pan-American Medical Congress of 1893 for Kansas; Fellow of the American Academy of Medicine; Member of the American Public Health Association; Member of the American Medical Association; Member of the Western Association of Obstetricians and Gynecologists; Member of the Kansas State Medical Society. N. W. corner Santa Fé and Prescott Avenues, Salina, Kan.

1892.—Dorsett, Walter B., M.D. Professor of the Diseases of Women and Clinical Gynecology in the St. Louis College of Physicians and Surgeons; President of the St. Louis Medical Society, 1892. 3323 Lucas Avenue, St. Louis, Mo.

1889.—Douglas, Richard, M.D. Professor of Diseases of Women and Clinical Gynecology in the Medical Departments of the University of Nashville and Vanderbilt University; President of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, 1893; Fellow

of the British Gynecological Society; Member of the Southern Surgical and Gynecological Association. 110 Spruce Street, Nashville, Tenn.

1892.—Duff, John Milton, A.M., M.D., Ph.D. Chairman of the Section of Obstetrics and Diseases of Women in the American Medical Association, 1893; Professor of Obstetrics in the Western Pennsylvania Medical College; Surgeon and Gynecologist to the Pittsburg South Side Hospital; Fellow of the American Academy of Medicine; President of the Pittsburg Obstetrical Society, 1891. 2006 Carson Street, Pittsburg, Pa.

1892.—Dunning, Lehman Herbert, M.D. Professor of Diseases of Women in the Medical College of Indiana; Consulting Gynecologist to the Indianapolis City Hospital and Dispensary. 249 North Alabama Street, Indianapolis, Ind.

Founder.—*Eliot, Llewellyn, M.D. Washington, D. C. 1892.

1890.—Fenger, Christian, M.D. Professor of the Principles of Surgery and Clinical Surgery in the Northwestern University Medical School (Chicago Medical College). 269 La Salle Av., Chicago, Ill.

1890.—Frederick, Carlton C., B.S., M.D. Adjunct Professor of Obstetrics in the Medical Department of Niagara University; Obstetrician and Gynecologist to the Buffalo Woman's Hospital; Obstetrician to the Widows' and Infants' Asylum. 64 Richmond Avenue, Buffalo, N. Y.

1889.—*Gardner, William Sisson. Baltimore, Md. 1891.

1891.—Gibbons, Henry, Jr., A.M., M.D. Dean and Professor of Obstetrics and Diseases of Women and Children in Cooper Medical College; Consulting Physician to the French and the Children's Hospitals. 920 Polk Street, San Francisco, Cal.

Founder.—Glasgow, Frank A., A.B., M.D. Professor of Clinical Gynecology in the St. Louis Medical College; Physician and Pathologist to the Martha Parsons Free Hospital for Children; In charge of the Female Medical and the Gynecological Departments of the St. Louis Mullanphy Hospital; Consultant to the St. Louis (city) Female Hospital. The Ericsson, 2608 Locust Street, St. Louis, Mo.

1892.—Haggard, William David, M.D. Professor of Gynecology and Diseases of Children in the Medical Department of the

University of Tennessee; Consulting Gynecologist to City Hospital; Gynecologist to St. Margaret's Hospital; Chairman of Section on Diseases of Children, American Medical Association, 1886; Fellow (President, 1888) of the Southern Surgical and Gynecological Association; President of the Nashville Academy of Medicine and Surgery. 312 North High Street, Nashville, Tenn.

1889.—Hall, Rufus Bartlett, M.D. Didactic and Clinical Lecturer on Gynecology in the Miami Medical College; Surgeon in charge of the Abdominal Department of the Presbyterian Hospital. *Vice-President*, 1891. 154 West Eighth Street, Cincinnati, Ohio.

1891.—Haynes, John Rudolph, M.D., Ph.D. Associate Professor of Gynecology in the Medical College of the University of Southern California. 929 South Main Street, Los Angeles, Cal.

Founder.—Hill, Hampton Eugene, M.D. *Executive Council*, 1890. *Vice-President*, 1892. Saco, Maine.

1889.—Hoffman, Joseph, B.A., M.D. 126 West Diamond Street, Philadelphia, Pa.

1891.—Holmes, Josus Billington Sanders, M.D. President of the Georgia State Medical Association, 1890; Member of the Southern Surgical and Gynecological Association; Member American Medical Association. Rome, Georgia.

1891.—Howitt, Henry, M.D., M.R.C.S. Eng. Surgeon to the Guelph General and St. Joseph's Hospitals, Guelph; Member of the British and Ontario Medical Associations; Medical Health Officer for the City of Guelph. 235 Woolwich Street, Guelph, Ont., Canada.

1890.—Hughes, Donnel, M.D. *Executive Council*, 1893. 4005 Chestnut Street, Philadelphia, Pa.

1892.—Hulbert, George Frederick, M.D. Professor of the Principles and Practice of Medicine and Clinical Gynecology in the Marion-Sims Medical College; Consulting Physician and Surgeon to the Missouri Pacific Railway Hospital; Consulting Gynecologist to the St. Louis City and Female Hospitals; Secretary of the St. Louis Obstetrical and Gynecological Society. *Vice-President*, 1894. 3026 Pine Street, St. Louis, Mo.

1892.—Hypes, Benjamin Murray, A.M., M.D. Professor of Obstetrics in the Marion-Sims Medical College. 2005 Victor Street, St. Louis, Mo.

Founder.—Ill, Edward Joseph, M.D. Surgeon to the Woman's Hospital; Gynecologist to St. Barnabas' and Consulting Gynecologist to the German Hospitals. *Vice-President*, 1893. 1002 Broad Street, Newark, N. J.

Founder.—Jarvis, George Cyprian, M.D. Visiting Surgeon to the Hartford Hospital. 98 High Street, Hartford, Conn.

1892.—Jelks, James T., M.D. President of the Arkansas Medical Society, 1892; Chairman of the Section of Surgery in the American Medical Association, 1893; Professor of Gynecology in Barnes Medical College, St. Louis, Mo, 178 Central Avenue, Hot Springs, Ark.

1891.—Johnston, George Ben, M.D. Professor of Surgery in the Medical College of Virginia; Physician to St. Sophia's Home for the Aged; Consulting Surgeon to the Richmond Eye, Ear, and Throat Infirmary; Vice-President of the Southern Surgical and Gynecological Association, 1892. 407 East Grace Street, Richmond, Va.

1892.—King, Willis Percival, M.D. Assistant Chief Surgeon to the Missouri Pacific Railway Hospital; Vice-President of the American Medical Association, 1892. 810 Harrison Street, Kansas City, Mo.

1890.—Krug, Florian, M.D. Professor of Gynecology at the Polyclinic; Gynecologist to the German Hospital; Fellow of the Academy of Medicine; Member of the Obstetrical Society; Member of the Medical Society of the County of New York; Member of the German Medical Society. 13 East Forty-first St., New York, N. Y.

1893.—Laidley, Leonidas Hamlin, M.D. Professor of Gynecology in the Beaumont Hospital Medical College; Surgeon-in-Chief to the Protestant Hospital. 3538 Washington Avenue, St. Louis, Mo.

1890.—Longyear, Howard Williams, M.D. Gynecologist to Harper Hospital; Physician to the Woman's Hospital; President of the Detroit Gynecological Society, 1889; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892. *Vice-President*, 1893. 698 Woodward Avenue, Detroit, Michigan.

Founder.—Lothrop, Thomas, M.D. Professor of Obstetrics, Niagara University; Director of the Woman's Hospital; Physician to St. Francis Hospital; Consulting Physician to the Hospital of the Sisters of Charity and to the Providence Retreat for the Insane. 153 Delaware Avenue, Buffalo, N. Y.

1891.—Macdonald, Willis Goss, M.D. Lecturer on Operative Surgery and Instructor in Abdominal Surgery in Albany Medical College; Surgeon to the Out-door Department of the Albany Hospital. 27 Eagle Street, Albany, N. Y.

Founder.—McArdle, Thomas Eugene, A.M., M.D. Professor of Minor Surgery in the National Medical College; Assistant Surgeon in the Children's Hospital. 819 Seventeenth Street, Washington, D. C.

1891.—†McCann, James, M.D. Pittsburg, Pa. 1893.

1893.—McColl, Hugh, M.D. Graduate Toronto Normal, 1864; Bellevue Hospital Medical College, N. Y., 1871; Member of the American Medical Association; Member of the American Health Association; Member of the American Academy of Political and Social Science; Member of the Michigan State Medical Society; Member of the Detroit Gynecological Society; Member of the Michigan N. E. District Medical Association. Nepessing Street, Lapeer, Mich.

Founder.—McMurtry, Lewis Samuel, A.M., M.D. Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical Society of Philadelphia and of the Gynecological Society of Boston. *Executive Council*, 1891–'92. *President*, 1893. 231 West Chestnut Street, Louisville, Ky.

Founder.—Manton, Walter Porter, M.D. Visiting Physician to the Woman's Hospital; Consulting Gynecologist to the Michigan State Aslyum for the Insane; Fellow of the British Gynecological Society; Fellow of the Royal Microscopial Society. *Vice-President*, 1894. 83 Lafayette Avenue, Detroit, Michigan.

Founder.—Marcy, Henry Orlando, A.M., M.D., LL.D. Surgeon to the Hospital for Women, Cambridge; President American Medical Association, 1892; President of the Section of Gynecology, Ninth International Medical Congress; late President of the American Academy of Medicine; Member of the British Medical Association; Member of the Massachusetts Medical Society; Member of the Boston Gynecological Society; Corresponding Member of the Medico-Chirurgical Society of Bologna, Italy. 180 Conmonwealth Avenue, Boston, Massachusetts.

Founder.—Maxwell, Thomas Jefferson, M.D. Professor of Obstetrics and Gynecology, College of Physicians and Surgeons; Surgeon to St. Joseph's Hospital. 727 North Ninth Street, Keokuk, Iowa.

1893.—Michael J. Edwin, M.A., M.D. Professor of Obstetrics in the University of Maryland. 201 West Franklin Street, Baltimore, Maryland.

Founder.—Miller Aaron Benjamin, M.D. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital, House of The Good Shepherd and Dispensary. 326 Montgomery Street, Syracuse, N. Y.

1892.—Miller, Alfred Beckett, M.D. Member of the American Medical Association; Member of the National Association of Railway Surgeons; President of the Missouri State Medical Association, 1892; Late Lecturer on Gynecology in the Medical Department of the State University of Missouri. Macon, Mo.

1893.—Miller, Joseph Sylvester, M.D. 326 South George Street, York, Pa.

Founder.—Montgomery, Edward Emmett, B.S., M.D. Professor of Clinical Gynecology in the Jefferson Medical College; Gynecologist to Jefferson Medical College Hospital and St. Joseph's Hospital; Obstetrician to the Philadelphia Hospital. *Vice-President*, 1888–'89; *President*, 1890. 1818 Arch Street, Philadelphia, Pa.

1890.—Morris, Robert Tuttle, A.M., M.D. Instructor in Surgery at the New York Post-Graduate Medical School and Hospital. *Vice-President*, 1892. 133 West Thirty-fourth Street, New York, N. Y.

Founder.—*Moses, Gratz Ashe, M.D. (See Honorary Fellows.)

Founder.—Myers, William Herschel, M.D. Surgeon to St. Joseph's Hospital; Member of the American and the British Medical Associations; Member of the Pathological Society of London; Member of the International Congress of Gynecologists and Obstetricians; Member of Chicago Medical Society. *Vice-President*, 1890. 157 West Wayne Street, Fort Wayne, Indiana.

1891.—Nevitt, R. Barrington, B.A., M.D. Lecturer on Clinical Surgery and Dean of the Woman's Medical College; Surgeon to Toronto General Hospital; Surgeon to the Hospital for Sick Children; Surgeon to St. Michael's Hospital. 176 Jarvis Street, Toronto, Ont., Canada.

Founder.—*Opie, Thomas, M.D. Baltimore, Md. 1891.

1889.—Paine, John Fannin Young, M.D. Professor of Obstetrics and Gynecology in the School of Medicine, University of Texas; Obstetrician and Gynecologist to the John Sealy Hospital; President

of the Texas State Medical Association, 1888; Vice-President of the Section of Public and International Hygiene in the Ninth International Medical Congress; Member of the American Medical Association, and of the Southern Surgical and Gynecological Association. S. E. cor. Broadway and Twenty-sixth Street, Galveston, Texas.

1890.—Pearson, William Libbey, M.D. 713 Union Street, Schenectady, N. Y.

1891.—Peck, George S., M.D. Consulting Surgeon to the City Hospital. 26 West Federal Street, Youngstown, O.

1893.—Peterson, Reuben, A.B., M.D. Gynecologist to St. Mark's Hospital. 26 South Union Street, Grand Rapids, Mich.

1891.—Pond, Edmund M., M.D. 20 South Main Street, Rutland, Vermont.

1891.—Porter, William, Jr., M.D. Attending Physician to the Hartford Orphan Asylum; Member of the Hartford Medical Society, of the Hartford County Medical Society, and of the Connecticut State Medical Society. 47 Forest Street, Hartford, Conn.

Founder.—Potter, William Warren, M.D. Consulting Gynecologist to the Woman's Hospital; Examiner in Obstetrics, New York State Medical Examining and Licensing Boaad; Chairman of the Section of Obstetrics and Diseases of Women, American Medical Association, 1890; President of the Buffalo Obstetrical Society, 1884–'86; Member of the Southern Surgical and Gynecological Association; President of the Medical Society of the State of New York, 1891: Executive President of the Section of Gynecology and Abdominal Surgery, Pan-American Medical Congress, 1893. *Secretary*, 1888–'94. 284 Franklin Street, Buffalo, N. Y.

1891.—Praeger, E. Arnold, M.D. Surgeon to the Female Hospital; Principal Surgeon to the New Vancouver Coal and Mining Company; Fellow of the Obstetrical Society of London, England; Senator for Nanaimo in the British Columbia University. Front Street, Nanaimo, B. C.

Founder.—Price, Joseph, M.D. Physician-in-charge of the Preston Retreat; Physician-in-charge of the Obstetrical and Gynecological Department of the Philadelphia Dispensary; Member of the Southern Surgical and Gynecological Association; Honorary Fellow of the Medical Society of the State of New York; Honorary Fellow of the South Carolina Medical Society; Honorary Fellow of the Virginia Medical Society; Member of the British Gynecological Association,

and of the Edinburgh Obstetrical Society. *Executive Council*, 1894. 500 North Twentieth Street, Philadelphia, Pa.

1890.—*Price, Mordecai, M.D. Philadelphia, Pa. 1892.

Founder.—Reed, Charles Alfred Lee, A.M., M.D. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery, and in the Woman's Medical College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893. *Executive Council*, 1890–'94. 311 Elm Street Cincinnati, Ohio.

1890.—Ricketts, Edwin, M.D. Professor of Abdominal Surgery and Gynecology in the Cincinnati Polyclinic; Member of the American and British Medical Associations; Member of the Southern Surgical and Gynecological Association. 137 Broadway, Cincinnati, Ohio.

1890.—Robinson, William Lovaille, M.D. Ex-President of the Danville Medical Society; Member of the Virginia State Medical Examining Board; Member of the Southern Surgical and Gynecological Association. 733 Main Street, Danville, Va.

1889.—Rohé, George Henry, M.D. Professor of Materia Medica, Hygiene, and Mental Diseases in the College of Physicians and Surgeons; Superintendent of the Maryland Hospital for the Insane. *Vice-President*, 1891. *Executive Council*, 1892–'93. *President*, 1894. Catonsville, Md.

1892.—Rosenwasser, Marcus, M.D. Dean and Professor of the Diseases of Women and Abdominal Surgery in the University of Wooster; Gynecologist to the Cleveland Hospital for Women and Children; Consulting Gynecologist to the City Hospital; Member of the American Medical and Ohio State Medical Associations. 722 Woodland Avenue, Cleveland, Ohio.

1890.—Ross, James Frederick William, M.D., L.R.C.P. (Eng.). Gynecologist to the Toronto General Hospital; Surgeon to the Woman's Hospital; Lecturer in Gynecology at the Woman's Medical College. *Executive Council*, 1892–'94. 481 Sherbourne Street, Toronto, Ont., Canada.

1890.—Sexton, John Chase, A.M., M.D. *Executive Council*, 1894. Rushville, Indiana.

1889.—Seymour, William Wotkyns, A.B., M.D. Professor of Gynecology in the University of Vermont; formerly House Surgeon of the Boston City Hospital; Member of the American Medical Associa-

tion; Fellow of the New York State Medical Association; Member of the British Medical Association. *Executive Council*, 1892–'94. 105 Third Street, Troy, N. Y.

Founder.—Shepherd, George Rubens, M.D. 667 Asylum Avenue, Hartford, Conn.

1890.—*Shoemaker, George Erety, M.D. 1891.

1891.—Smith, Charles N., M.D. Editor *American Gynecological Journal.* 1921 Franklin Avenue, Toledo, Ohio.

Founder.—Stanton, Byron, M.D. Professor of Diseases of Women and Children in the Miami Medical College. *Executive Council*, 1888–'89. 157 Dayton Street, Cincinnati, Ohio.

Founder.—*Stewart, William Shaw, A.M., M.D. Philadelphia, Pa. 1893.

1890.—Stone, Isaac Scott, M.D. Professor of Clinical Gynecology in the University of Georgetown; Gynecologist to the Columbia Hospital for Women; Fellow of the British Gynecological Society; Member of the Southern Surgical and Gynecological Association; Member of the Medical Society of the District of Columbia. 1504 H Street, N. W., Washington, D. C.

Founder.—Storrs, Melancthon, A.M., M.D. Attending Surgeon to the Hartford Hospital; President Connecticut State Medical Society. *Executive Council*, 1888–'89. 91 Ann Street, Hartford, Conn.

Founder.—Taylor, William Henry, M.D., Ph.D., Dean and Professor of Obstetrics, Miami Medical College; Obstetrician to the Cincinnati Hospital; Consulting Obstetrician to Christ's Hospital. *President*, 1888–'89. 329 West Seventh Street, Cincinnati, Ohio.

1890.—Thomas, George Gillett, M.D. Ex-President Medical Society of the State of North Carolina. Wilmington, N. C.

Founder.—Townsend, Franklin, A.M., M.D. Emeritus Professor of Physiology, Albany Medical College; Obstetrician to the Albany City Hospital; Visiting Obstetrician and Gynecologist to St. Peter's Hospital; Visiting Physician to the Albany Protestant Orphan Asylum. 2 Park Place, Albany, N. Y.

Founder.—Vander Veer, Albert, A.M., M.D., Ph.D. Professor of Didactic, Clinical, and Abdominal Surgery, Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital; Fellow of the American Surgical Association; Fellow

of the British Gynecological Society; Corresponding Member of the Boston Gynecological Society. *Executive Council*, 1889–'91. *President*, 1892. 28 Eagle Street, Albany, N. Y.

1891.—Walker, Edwin, M.D., Ph.D. Gynecologist to the Evansville City Hospital; President of the Indiana State Medical Society, 1892; Member of the American Medical Association, and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association. 427 Upper Third Street, Evansville, Indiana.

1890.—Ward, Milo Buel, A.M., M.D. Professor of Gynecology in the Kansas Medical College; Secretary of the Section on Obstetrics and Diseases of Women in the American Medical Association, 1893; President of the Western Association of Obstetricians and Gynecologists, 1892. 323 Potwin Place, Topeka, Kansas.

Founder.—*Wathen, William Hutson, M.D. Louisville, Kentucky. 1893.

1889.—Wenning, William Henry, A.M., M.D. Professor of Obstetrics in the Woman's Medical College; Gynecologist to St. Mary's Hospital. 126 Laurel Street, Cincinnati, Ohio.

Founder.—Werder, Xavier Oswald, M.D. Gynecologist to the Mercy Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to St. Francis Hospital; Consulting Surgeon to the South Side Hospital. *Treasurer*, 1888–'94. 806 Penn Avenue, Pittsburg, Pa.

1889.—*West, Hamilton Atchinson, M.D. Galveston, Texas, 1891.

1893.—Winn, John Farmer, M.D. Adjunct Professor of Obstetrics in the College of Physicians and Surgeons, Richmond, Virginia; Corresponding Secretary Medical Society of Virginia; Member of the Richmond Academy of Medicine and Surgery; Editor and Proprietor of *Richmond Virginia Practice*. 800 East Marshall Street, Richmond, Virginia.

Founder.—Wright, Adam Henry, B.A., M.D. Univ. Toronto, M.R.C.S. Eng. Professor of Obstetrics in the University of Toronto; Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital. *President*, 1891. 30 Gerrard Street East, Toronto, Ont., Canada.

Total, ninety-six Ordinary Fellows.

MINUTES OF THE PROCEEDINGS

AT THE

SIXTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD IN THE

ORDINARY OF THE RUSSELL HOUSE,

Detroit, Michigan,

JUNE 1, 2, AND 3, 1893.

SIXTH ANNUAL MEETING.

DETROIT, MICH., THURSDAY, FRIDAY, AND SATURDAY, JUNE 1, 2, AND 3, 1893.

The following-named Fellows were present:

ARMSTRONG, OSCAR S.	DETROIT.
BOISE, EUGENE	GRAND RAPIDS.
CARSTENS, J. HENRY	DETROIT.
DUFF, JOHN M.	PITTSBURG.
HOWITT, HENRY	GUELPH.
HULBERT, GEORGE F.	ST. LOUIS.
LAIDLEY, LEONIDAS H.	ST. LOUIS.
LONGYEAR, HOWARD W.	DETROIT.
MANTON, WALTER P.	DETROIT.
McMURTRY, LEWIS S.	LOUISVILLE.
PECK, GEORGE S.	YOUNGSTOWN.
POND, EDMUND M.	RUTLAND.
POTTER, WILLIAM WARREN	BUFFALO.
REED, CHARLES A. L.	CINCINNATI.
ROHÉ, GEORGE H.	CATONSVILLE.
ROSENWASSER, MARCUS	CLEVELAND.
ROSS, JAMES F. W.	TORONTO.
SEXTON, JOHN C.	RUSHVILLE.
SMITH, CHARLES N.	TOLEDO.
WERDER, XAVIER O.	PITTSBURG.
WENNING, WILLIAM H.	CINCINNATI.

Total, twenty-one Fellows.

Letters or telegrams of regret were received from the following-named Fellows:

Honorary—August E. Cordes, August Martin, G. Leopold, Gratz Ashe Moses, Max Sänger, and Lawson Tait.

Ordinary—William J. Asdale, William E. Ashton, Rollin L. Banta, David Barrow, Eugene P. Bernardy, Young H. Bond, James P. Boyd, Albert H. Cordier, Ernest W. Cushing, William E. B. Davis, George R. Dean, William B. Dewees, Walter B. Dorsett, Carlton C. Frederick, Rufus B. Hall, Hampton E. Hill, Donnel Hughes,

Edward J. Ill, James T. Jelks, Willis P. King, Florian Krug, Thomas Lothrop, Edward E. Montgomery, Robert T. Morris, William H. Meyers, E. Arnold Praeger, Edwin Ricketts, William Wotkyns Seymour, Byron Stanton, Isaac S. Stone, Melancthon Storrs, Albert Vander Veer, and Adam H. Wright.

First Day—*Thursday, June 1st.*

Morning Session.—The meeting was called to order at 10.15 o'clock by the President, Dr. Lewis S. McMurtry, of Louisville, Ky., who said:

Fellows of the American Association of Obstetricians and Gynecologists: It is certainly a matter of mutual congratulation that we have assembled here this morning in the beautiful city of Detroit. The hospitality of the profession of this city we have most of us enjoyed in the days that are gone, and the companionship in our meetings of some of the members of the profession here we have had the pleasure of annually enjoying. The Association meets under most auspicious circumstances. The last volume of our *Transactions* is up to the standard of the very best publications of societies in the world. The work done by the Association during its five annual sessions marks an era in American gynecology, abdominal surgery, and obstetrics. At an appropriate time the Chair will have the privilege to address you on some subjects that he thinks may prove of interest to you, and for the present I will content myself simply in expressing the mutual congratulations which, I am sure, we all feel in meeting here in our Sixth Annual Meeting. (Applause.)

The Chair will take the liberty of asking Dr. Carstens, Chairman of the Committee of Arrangements, to say a few words.

Remarks by Dr. Carstens.

Mr. President and Gentlemen of the Association: It gives me great pleasure on behalf of the Detroit Gynecological Society, the Detroit Medical Library Association, the Wayne County Medical Society, the Detroit Academy of Medicine, and the citizens of Detroit, to bid you a most hearty welcome to this city. We hope you will make yourselves at home. It is hardly necessary for me to dilate upon the peculiar beauties of the city of Detroit, as you come here more especially for business. We claim that we have one of the most beautiful cities in the country, and we hope you will have an opportunity of seeing all the places of interest.

Among other things of interest we have in this city eighteen hospitals, and four or five medical societies which I am happy to say we are about to do away with. We are going to consolidate our medical societies into one. We have two medical colleges. The Detroit College of Medicine has a department of pharmacy as well as of veterinary surgery. Let me say that these colleges do not get into a quarrel like those of some or most other cities. (Laughter.) We all join hands and stand up for the honor and dignity of the profession.

Gentlemen, our latch-string is out, and all you have to do is to pull it. Again, we bid you welcome. (Applause.)

The President asked Dr. George H. Rohé to respond to the words of welcome by Dr. Carstens.

RESPONSE BY DR. ROHÉ.

Mr. Chairman of the Committee of Arrangements: It was hardly necessary for you to say what you did, because we were sure of a hearty welcome to the beautiful city of Detroit. We are not strangers here. The medical men of the United States and of the Dominion of Canada have been here before. They know what the hospitality of the medical profession and of the people of Detroit means. They know your latch-string is always out, and they are accustomed when they come here to pull it, and everything is thrown wide open. I am sure we shall be glad to see the beauties of your city if we have time. Some of us may take lessons in harmony from your medical colleges. (Laughter.) But we came here to work, and expect to go to our homes feeling that we have had a very profitable meeting. We accept your tender of hospitality. We shall claim it. We feel that we are practically at home. When we go away we will feel we have made stronger the bond of friendship that exists between the profession of this city and the profession throughout the United States and the Dominion of Canada. (Applause.)

Upon recommendation of the Executive Council the following-named physicians were invited, by vote of the Association, to participate in the proceedings as members by invitation:

Drs. J. Byron Newman, Florence Huson, Andrew W. Imrie, Harriet A. Gerry, W. F. Metcalf, R. A. Newman, J. F. Mann, Edwin S. Sherwill, Johann Flintermann, Arthur H. Bigg, E. W. Jenks, C. Henri Leonard, Charles G. Jennings, F. C. Ruggles, Emma D. Cook, Lula M. Hutson, A. W. Ives, C. W. Barrett, P. C. McEwen, Donald Maclean, F. W. Mann, E. T. Tappey, F. J. Lennox, W. B. Sprague, E. B. Smith, Hamilton E. Smith, Hiram A. Wright, J. J. Mulheron,

A. A. McLartey, R. Boyd Miller, Albert E. Carrier, G. S. Ney, and H. O. Walker, of Detroit, Mich.; A. I. Burdeno, Delrey, Mich.; J. L. McLaren, Saginaw, Mich.; Fred. J. Cleppert, Delrey, Mich.; J. J. Green, Pittsburg; Jane W. Carroll, Buffalo; John William Keating, Ann Arbor, Mich.; A. W. Alvord, Battle Creek, Mich.; J. W. Palmer, Baltimore; James Samson, Windsor, Ont.; Walter E. Tiffin, Florence, Ont.; and Louise M. Harvey, Riverside, Cal., together with the President and Fellows of the Detroit Gynecological Society.

Papers were then read as follows:

1. "Intra-uterine Asphyxia," by George F. Hulbert, M.D., of St. Louis.

Discussed by Drs. Carstens, Duff, Sexton, Boise, and in closing by Dr. Hulbert.

2. "Placenta Previa," by William H. Wenning, M.D., of Cincinnati.

Discussed by Drs. Ross, Potter, Hulbert, Duff, Sexton, and in closing by Dr. Wenning.

3. "The Care of Pregnant Women," by John M. Duff, M.D., of Pittsburg.

On motion, the discussion on this paper was postponed until the afternoon session and made the first order.

Afternoon Session, 3 o'clock.

The President in the Chair.

Dr. Duff's paper was discussed by Drs. Hulbert, Werder, and Rosenwasser.

4. "Dilatation of the Cervix for Dysmenorrhea," by E. M. Pond, M.D., of Rutland.

Discussed by Drs. Carstens, Longyear, Ross, Potter, Rosenwasser, McMurtry, Hulbert, Werder, and in closing by Dr. Pond.

5. "Extra-uterine Pregnancy, with Report of Cases," by George S. Peck, M.D., of Youngstown.

Discussed by Drs. Sexton, Ross, Potter, Rosenwasser, Carstens, and in closing by Dr. Peck.

6. "Nature of Shock," by Eugene Boise, M.D., of Grand Rapids.

Discussed by Dr. Carstens.

SECOND DAY—*Friday, June 2d.*

Morning Session, 10 o'clock.—The President in the Chair.

7. "A Contribution to the Pathology of Surgical Disease of the Gall-bladder," by Walter P. Manton, M.D., of Detroit.

8. "A Few Practical Notes on the Establishment of Anastomosis between the Gall-bladder and the Intestine for Obstruction of the Common Duct, with the Relation of a Case of Obstruction of the Common Duct by Small Growth," by James F. W. Ross, M.D., of Toronto.

The two papers, 7 and 8, were discussed jointly by Drs. Laidley, Reed, Longyear, and in closing by Dr. Manton and Dr. Ross.

9. "What are the Indications for Abdominal Section in Intra-pelvic Hemorrhage?" by M. Rosenwasser, M.D., of Cleveland.

Discussed by Drs. Ross, Reed, Hulbert, Carstens, Sexton, Werder, and in closing by Dr. Rosenwasser.

At 12 o'clock M. Vice-President Longyear took the Chair.

10. President's Address: "Present Position of Pelvic Surgery," by Lewis S. McMurtry, M.D., of Louisville.

Afternoon Session, 3 o'clock.

The President in the Chair.

The Secretary read telegrams and letters of regret from the following: Edwin Ricketts, Cincinnati; E. Arnold Praeger, Nanaimo; Donnel Hughes, Philadelphia; Rufus B. Hall, Cincinnati; Robert T. Morris, New York City; Walter B. Dorsett, St. Louis; and I. S. Stone, Washington, D. C.

11. "A Plea for Better Surgery in the Closure of the Abdominal Incision," by Howard W. Longyear, M.D., of Detroit.

12. "The Management of the Abdominal Incision," by Charles A. L. Reed, M.D., of Cincinnati.

The two papers, 11 and 12, were discussed together, by Drs. Ross, Hulbert, Carstens, McMurtry, Rohé, Rosenwasser, Howitt, Armstrong, and in closing by Dr. Longyear and Dr. Reed.

THIRD DAY—*Saturday, June 3d.*

Morning Session, 10 o'clock.—The President in the Chair.

13. "Central Rupture of the Perineum: Its Causation and Prevention," by John C. Sexton, M.D., of Rushville.

Discussed by Drs. Boise, Rosenwasser, Duff, and in closing by Dr. Sexton.

14. A Case of Myomectomy with Extra-peritoneal Treatment of the Pedicle, followed by Pregnancy and Complicated by Hemorrhages through the Abdominal Cicatrix," by X. O. Werder, M.D., of Pittsburg.

Discussed by Drs. Hulbert, Reed, Rosenwasser, and in closing by Dr. Werder.

15. "Further Observations on the Relation of Pelvic Disease and Psychical Disturbances in Women," by George H. Rohé, M.D., of Catonsville.

Discussed by Drs. Reed, Duff, Boise, J. J. Green, of Pittsburg (by invitation), C. Henri Leonard, of Detroit (by invitation), and in closing by Dr. Rohé.

The following papers were read by title, and ordered published in the *Transactions:*

1. "Endoscopic Tubes for Direct Examination of the Interior of the Uterus and Bladder," by Robert T. Morris, M.D., of New York City.

2. "Vaginal Hysterectomy for Malignant Disease," by Rufus B. Hall, M.D., of Cincinnati.

3. "Pelvic Abscess," by I. S. Stone, M.D., of Washington, D. C.

4. "The Legal Questions in Gynecological Operations on the Insane," by Walter P. Manton, M.D., of Detroit.

5. "Puerperal Eclampsia; Its Causation and Treatment," by Aug. P. Clarke, M.D., of Cambridge.

Dr. Charles A. L. Reed, of Cincinnati, offered the following resolution, which was seconded by Dr. Hulbert, and unanimously carried:

Resolved, That the thanks of the American Association of Obstetricians and Gynecologists be, and are hereby tended to our colleagues of Detroit for the efficient and admirable arrangements for our comfort and entertainment; to the members of the Detroit Gynecological Society and other members of the local profession for courtesies extended the Fellows during the meeting; and to Dr. L. S. McMurtry for the graceful and efficient manner in which he has discharged the duties of President of this Association for the year 1893.

The following-named newly elected officers were then installed:

President, George H. Rohé, M.D., of Catonsville. *Vice-Presidents*, Walter P. Manton, M.D., of Detroit, and George F. Hulbert, M.D., of St. Louis. *Secretary*, William Warren Potter, M.D., of Buffalo. *Treasurer*, X. O. Werder, M.D., of Pittsburg. *Executive Council*, Charles A. L. Reed, M.D., of Cincinnati; Joseph Price, of Philadelphia; James F. W. Ross, M.D., of Toronto; William W. Seymour, M.D., of Troy, and John C. Sexton, M.D., of Rushville.

President McMurtry then addressed the Association as follows:

GENTLEMEN OF THE ASSOCIATION: It becomes my pleasant duty to surrender into your hands the trust which you reposed in me one year ago, which I have endeavored to faithfully discharge, and which you have now placed in the hands of one more worthy and more competent in every way to fulfil the duties of the office of President than I have been. In retiring from the position, which I feel to be one of the highest honors that I have ever known in my professional life, I have to thank you most cordially for the very great consideration which you have extended to me and for that courtesy in a very high degree which I have received at your hands from the foundation of this Association.

I wish to say on this occasion, that of the various professional associations which it has been my good fortune to share during my professional life, I have never known any that have been to me so pleasant, congenial, profitable, and so universally instructive as has been my affiliation and connection with this Association. This Association has done a work that is among the greatest of any of the organizations that have been established in this country. It is a great thing to have such a well-organized Association, which fills a high place in our professional educational system, which is a great post-graduate medical school, to which advanced, progressive men can come, take their seats, listen and interchange their views and ideas with other men in the profession who are engaged in the same special line of work. It makes a man feel keenly his position and relation to issues involving life and death, and his relations to older practitioners in medicine and surgery. This Association has done more than any other with which I am acquainted for the instruction of the young, hard-working, rising, and active gynecologist. It has brought men out and put them to the front. The profession recognize it, and the general mass of medical practitioners are thoroughly in sympathy with this organization. We have only to be true to ourselves to build up our work, to widen our influence, and to do good from year to year. (Applause.)

I now surrender the trust which you have placed in my hands unto one whose hands will guide it, cherish it, and promote its interests. I have great pleasure in introducing to you Professor George H. Rohé, who will occupy the Chair for the ensuing year. (Loud applause.)

The President appointed Dr. John M. Duff, as a committee of one, to escort the President-elect to the Chair.

Dr. Rohé was very warmly received. He said:

Fellows of the American Association of Obstetricians and Gynecologists: You will not expect me to say anything to you at present, except in a feeble way to return my thanks for the distinguished honor you have conferred upon one so unworthy. At times it is an easy matter to assume the presidency of an Association, and to acquit one's self fairly well, but on an occasion like this, succeeding one who is so eminently qualified, who is so thoroughly a good fellow, who not only occupied the position of President with dignity but with grace, I feel the difficulties of my position. I feel it more than I can express. I look forward, however, to the same helpfulness from you that you have always extended to the occupant of the Presidential Chair, and with your help I am sure this Association will go on prospering during the coming year and during the succeeding years as it has since its organization.

The duties of the Chair are somewhat perfunctory, and in one respect I think you have made a wise selection in your present Chairman. You have taken him away from the floor and put him in a place where he does not have to do much talking, and you have sent back to the floor one who is thoroughly capable of discussing the various subjects that are brought before us. Again I thank you.

Dr. L. S. McMurtry presented the following resolution, which was unanimously adopted:

During the past year our distinguished Secretary, Dr. William Warren Potter, suffered a severe illness, from the effects of which he has scarcely recovered, depriving him for a time of the privilege of work and inflicting much anxiety upon his family and friends; therefore be it

Resolved, that the Fellows of this Association extend to Dr. Potter their most cordial congratulations upon his improved health, and offer the most sincere hope that he will soon be perfectly restored to his accustomed vigor and activity.

Dr. Potter arose amid great applause. He said:

Fellows of the American Association of Obstetricians and Gynecologists: I have not words to adequately express my appreciation of the kindness which I have received now and in the past at the hands of the Fellows of this Association. You will pardon me if I fail to say what ought to be said on this occasion, for my heart is too full to trust my lips with speech.

The President then declared the Sixth Annual Meeting adjourned *sine die*.

WILLIAM WARREN POTTER,
Secretary.

Executive Sessions.

Thursday, June 1, 1893.

The President in the Chair.

The Treasurer, Dr. X. O. Werder, of Pittsburg, presented his report, showing a balance on hand of $86.45. The Secretary also reported the accounts and vouchers with reference to the contingent expenses for the fiscal year.

On motion, the President appointed as Auditing Committee, Drs. Sexton and Pond.

The Auditing Committee subsequently reported that the accounts and vouchers of the Secretary and Treasurer had been carefully examined and were found correct.

The Secretary, in behalf of the Executive Council, presented a list containing the names of candidates for Fellowship. The Association then elected by ballot the following-named candidates:

Dr. O. S. Armstrong, Detroit; Dr. Eugene Boise, Grand Rapids; Dr. L. H. Laidley, St. Louis; Dr. Hugh McColl, Lapeer; Dr. J. Edwin Michael, Baltimore; Dr. J. S. Miller, York; Dr. Reuben Peterson, Grand Rapids; Dr. J. F. Winn, Richmond.

Friday, June 2, 1893.

The Executive Session was called to order by the President at 8 o'clock at the Detroit Club.

The Secretary announced as the first business in order the following amendment to the Constitution, offered by Dr. Montgomery: "Ordered, that the second paragraph of Article III. be stricken out." The paragraph reads as follows: "The Ordinary Fellows shall not exceed 100 in number."

Dr. Henry J. Carstens moved that the membership be increased to 150 or 200. Seconded.

Dr. Walter P. Manton moved as a substitute that the membership be limited to 125. Seconded.

After some discussion by Dr. McMurtry, the substitute was put and carried.

The Secretary said it was customary for the Association each year to pass a resolution permitting the members to publish their papers in one respectable medical journal, stating on the MS. that it was read at the meeting of the Association, and that following the name of the

author he shall state "Fellow of the American Association of Obstetricians and Gynecologists." He moved that this privilege be continued. The motion was seconded by Dr. Rohé and carried.

The next matter for disscussion was a place of meeting.

Dr. Rohé, in an appropriate speech, invited the Association to hold its next meeting in the city of Baltimore.

Dr. Carstens moved that the invitation be accepted. Seconded.

Dr. Ross moved that Toronto be substituted in place of Baltimore. Seconded.

After considerable discussion, participated in by Drs. Reed, Armstrong, Carstens, McMurtry, Hulbert, Potter, Ross, and Manton, the substitute was put by the Chair and unanimously carried.

The time of meeting provoked considerable discussion *pro* and *con*, and, on motion, the matter was left to be decided by the Executive Council.[1]

Dr. McMurtry moved that the Executive Council be authorized to formulate and prepare an address, to be sent to every one of the Fellows, impressing upon them the importance of having a full attendance of the membership of the Association at its meetings, the address to present something of the work and objects of the Association, and to be distributed before the next meeting. Seconded by Dr. Reed and carried.

Dr. McMurtry offered the following (to lie over one year):

Resolved, That the clause "They shall pay an entrance fee of twenty-five dollars," be stricken from Article V. of the Constitution, which relates to Corresponding Fellows, and substitute therefor, "They shall pay an annual fee of five dollars."

The following Fellows were elected by ballot as officers for the ensuing year:

President, George H. Rohé, M.D., of Catonsville. *Vice-Presidents*, Walter P. Manton, M.D., of Detroit, and George F. Hulbert, M.D., of St. Louis. *Secretary*, William Warren Potter, M.D., of Buffalo. *Treasurer*, X. O. Werder, M.D., of Pittsburg. *Executive Council*, Charles A. L. Reed, M.D., of Cincinnati; James F. W. Ross, M.D., of Toronto; William W. Seymour, M.D., of Troy; Joseph Price, M.D., of Philadelphia, and John C. Sexton, M.D., of Rushville.

There being no further business the Executive Session adjourned.

WILLIAM WARREN POTTER,
Secretary.

[1] The Executive Council subsequently decided that the seventh annual meeting be held in Toronto, Ont., on Wednesday, Thursday, and Friday, September 19, 20, and 21, 1894.

PAPERS

READ AT THE

SIXTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD IN THE

ORDINARY OF THE RUSSELL HOUSE,

Detroit, Mich.,

JUNE 1, 2, AND 3, 1893.

THE PRESIDENT'S ANNUAL ADDRESS.

THE PRESENT POSITION OF PELVIC SURGERY.

By L. S. McMURTRY, M.D.,
LOUISVILLE.

It is my first duty and privilege to thank you for the honor you have conferred upon me in electing me to this position; and secondly, to congratulate you upon the auspicious circumstances attending the sixth annual session of our Association. As the foundation of this organization was the natural result and inevitable outcome of circumstances which tended to circumscribe and limit the cultivation of gynecic surgery in America, so the growth and prosperity of our society have demonstrated the need of an organization extending such privileges widely among the profession. It is contrary to the genius of our American institutions and opposed to the broad catholic spirit of science, for a limited number of the profession to assume the exclusive right of a privileged class—an aristocracy in science, as it were—claim the prerogatives of a national organization, and debar from membership honorable members of the profession, capable and desirous of advancing the science and improving the practice of gynecology. The exclusive methods of the American Gynecological Society, and the abuse of the blackball in secret session, necessitated the establishment of a society upon a broader and more liberal basis, open to all reputable members of the profession who desire to cultivate the great specialty of gynecology. The limit of membership has been enlarged from time to time so that no worthy applicant has been refused admission to our ranks; and, as you know, a resolution is now pending to make the membership unlimited, as in the British Gynecological Society. I hope

this will be done, and that the Executive Council will see to it that all American physicians engaged in promoting the knowledge and improving the practice of gynecic surgery and obstetrics are invited and welcomed into this Association. Our membership already includes a number of able and distinguished members of the profession in Canada, and I hope we will in time claim a good representation in South American countries.

The publication of our papers and discussions in the medical journals has greatly extended the influence of our work, and has been appreciated by the profession. It is gratifying to note that other similar societies, which formerly limited the publication of papers to the pages of the annual volume of Transactions, have adopted this method. Our five volumes of Transactions have been accorded a most cordial reception by the profession both in America and Europe, and the commendatory reviews and letters relating thereto attest the high standard attained in our work. This should stimulate us to constant attendance at the annual meetings and renewed exertion in the work before us.

I have selected as a subject for some remarks upon this occasion,

THE PRESENT POSITION OF PELVIC SURGERY,

thinking I might present some general observations in this way which may be of interest and which cannot be readily included in the discussion of special topics. But little more than fifteen years have elapsed since pelvic surgery could claim a distinct place as a branch of the healing art. Gynecology was limited for the most part to the plastic surgery of the vagina and perineum, and the mechanical treatment of uterine displacements; while ovariotomy was relegated to surgery, and the accidents and consequences of pregnancy and labor were left to the obstetricians. In our educational system the diseases of women were taught along with children's diseases as an appendage of the chair of obstetrics, and pelvic surgery was a very insignificant part of the general surgeon's field of labor. Thus distributed as a subordinate kindred branch of obstetrics and surgery, gynecology had no definite or distinct place in our educational curriculum or in the practice of our art. The class of operations now applied most effectively in gynecic surgery were for the most part unknown, and conditions now curable were

not only beyond reach of treatment, but were unrecognized. These conditions were classed under the head of obscure diseases, and were treated with medicine and outward applications until discharged as incurable, or until death put an end to suffering.

The introduction of new methods of operating, based upon an appreciation of minute organic substances in relation to inflammation, suppuration, and systemic infection, made a new era in all departments of surgery, and created an entirely new system of gynecology. Our knowledge of modern peritoneal surgery began with this new era, and with it the physiology and pathology of the pelvic organs were recast. Under the same influences the management of labor and the puerperal state was revolutionized, and the prevention and treatment of puerperal fever were placed upon a correct basis, to the great saving of life and prevention of disease. The obstetrical operations, characterized by a fatality that was extreme, were rendered safe and practicable.

After ovariotomy had been practised some years it was abandoned on account of its severe mortality. It was revived and made practicable by a few courageous men in America and Great Britain. With the opening of the new era it was advanced to a position of safety and efficiency which soon made it the most successful major operation known to surgery. When the long-established fear of the peritoneum was dissipated, and it was demonstrated that this membrane could be opened and treated with safety, knowledge of the pathology of the pelvic organs rapidly grew, and light was thrown upon hitherto dark and fatal conditions of disease. Diseases of the Fallopian tubes and ovaries, the sequelæ and complications of puerperal diseases, gonorrhea and traumatic infections, were shown in their true relations and treated with success.

Ectopic gestation was elucidated and placed within the category of curable diseases; and neoplasms of the ovaries and uterus were made amenable to radical treatment, instead of the long-drawn methods of expectancy and tinkering which were followed with uniform disappointment and disaster. The radical cure of cancer of the uterus by complete excision was made practicable. Many painful conditions of the pelvic organs formerly unsuccessfully treated by local and systemic medication were made amenable to treatment, and operations hitherto complicated and uncertain were made simple and sure.

All these great advances in pelvic surgery were accomplished in a few years, and while the advance was so rapid as to render obsolete the existing authoritative works on gynecology, we must in justice remember that all this was made possible by the patient toil and splendid achievements of the pioneers of a preceding generation. The brilliant achievements of the present period would not have been possible without the labors of such men of courage and genius as McDowell, Sims, the Atlees, Baker Brown, Simpson, Bernutz and Goupil, Peaslee, Spencer Wells, Kœberlé, and Keith.

The present position of pelvic surgery is in many respects unique. From its beginning, as already indicated, this branch of surgery has been promoted and advanced by the labors of a few men. The history of ovariotomy throughout a long period is the history of pelvic surgery. The fate of this operation was for a long time centred in the personality of a few courageous individuals. The high position that operation has attained at the present time is due for the most part to the fact that its recorded results are made by a few operators. When the new surgery of the peritoneum was introduced it was seized upon in a reckless way by the multitude, and for a time its very existence was threatened. The splendid results of the few who were qualified by training and experience were made the basis of operations by many wholly unprepared for this exacting and difficult work. Operations were undertaken upon inadequate and erroneous conceptions of pathological conditions, and often indeed without any definite pathological data whatever, until in many influential quarters great discredit was thrown upon the work of able and conscientious men who were masters of pelvic pathology and pelvic surgery. Though in much less degree, this condition continues to obtain even at the present time, and deserves thoughtful consideration. It is my firm belief that this will continue until the practice of gynecology and pelvic surgery is as generally recognized by the profession as a specialty as is ophthalmic surgery. I do not mean by this that a gynecic surgeon should be one of narrow and limited training and experience, for in no department of practice is a general knowledge of medicine and surgery more essential. The views of the late Sir Morell Mackenzie upon this point are so sound and practical that I give them in his own clear words: "It is impossible that a man can be a really good specialist without possessing a general knowledge of disease, and

when I say general knowledge, I do not mean such a knowledge as can be obtained in a student's career, or even such as can be acquired by the holding of minor appointments at the termination of a hospital curriculum; what I consider requisite is such a familiarity with morbid processes as can only be acquired by those who are in the habit of using all the resources of their art in combating the great varieties of ills which flesh is heir to. In my opinion, only those who have acted as general practitioners for some years, or have held appointments as physicians or surgeons to general hospitals, are thoroughly equipped for practising as specialists. It is only after thorough knowledge has been obtained in many departments of medicine that training and experience can be focussed with advantage on a single point."[1]

There is as much technical knowledge and education of sense involved in the correct diagnosis of pelvic diseases as in the diagnosis of intra-ocular diseases with the ophthalmoscope. I mean by this that while with the touch the minute details of intra-pelvic lesions may not be so accurately discovered as eye lesions by the visual examination of the surgeon, the decision of the essential question of operative interference and treatment involves quite as much special knowledge—knowledge only to be acquired by laborious and prolonged training. Two years ago one of our Fellows, whose work has done as much as that of anyone to advance our knowledge of pelvic diseases and their treatment, remarked to me that he often doubted if pelvic surgery would be maintained and permanently established; adding, that there was so much imperfect, incomplete, and unsuccessful work being done by those who have not prepared themselves for it by special study and training, that the profession may lose confidence and put aside the good for fear of the bad.

It is a unique and remarkable incident that the most severe criticism of those engaged in pelvic surgery as a specialty has emanated from those to whom the criticism indulged is most applicable. The *éclat* of what the general surgeon calls a "laparatomy" seems to many irresistible. Without more than a cursory, general, and meagre idea of the pathology of the pelvic organs, and adopting the deceptive general indication of menstrual pain, without the convin-

[1] Presidential address delivered at the first meeting of the British Laryngological Society, November 14, 1888.

cing evidence of touch, they assume the existence of operative indications, and resort to removal of the uterine appendages. Oftentimes with no deeper conception of the purpose of such a procedure than the arrest of menstruation, without reference to the existence of demonstrable lesions, this important operation is performed. And yet these surgeons are the most severe critics of the painstaking specialist, who operates only for lesions otherwise incurable, and after normal functions have been destroyed. It is a fact capable of proof that this operation is most abused outside the specialty, and that the plea for careful discrimination and limitation of the operation has been, and is now, urged by those practising gynecology as a specialty. In this connection I would remark that likewise the exploratory incision is entirely misconstrued in its range of application by the same class of surgeons. It is altogether wide of the mark to presume that one is justified in resorting to an exploratory abdominal section in supposed intra-pelvic disease unless a high order of skill has been utilized by established diagnostic measures, and the condition is one progressively undermining vitality or endangering life.

When I say that pelvic surgery deserves recognition as a specialty, I mean in the sense that those who practise it should give to its pathology, symptomatology, and operative methods special study, and undergo preparatory training. Emergency operations, like appendicitis, penetrating wounds of the abdomen, intestinal obstruction, operations on the gall-bladder, and cystotomy, must necessarily be included in a general surgeon's training and scope of work, requiring of him practical knowledge of the technique of abdominal surgery. Likewise the general surgeon must master the technique of brain surgery, but that does not make of him a neurologist. Pelvic surgery and abdominal surgery are quite distinct. While both have in common the management of peritoneal invasion, the method of operating and the pathology are different. By way of demonstrating this point it is only necessary to call attention to the difference in the methods of abdominal surgeons and pelvic surgeons. The older operators, like Spencer Wells and Keith, have never adopted modern pelvic surgery. They operated for large tumors, and have refused to accept the modern pathology and operative treatment of inflammatory diseases of the uterine appendages. Pelvic surgery is of modern origin, too recent in the exposition both of its pathology

and operative methods for adoption by the old school of abdominal surgeons who deal alone with gross lesions and large tumors.

Again, if we look at the operative methods of the general surgeon in abdominal and pelvic work we have the most positive illustration of the distinction I desire to emphasize. The general surgeon in abdominal work adheres to the long incision with its increased exposure, the liberal array of instruments, including retractors and needle-holders, with the increased danger of sepsis; multiple ligaturing and protracted manipulation; elaborate suturing and complicated drainage. The pelvic surgeon works through a small incision, relying upon an educated touch in all intra-pelvic manipulations; reduces peritoneal exposure to the minimum; sees that only the operator's hand is introduced; limits his instruments to those absolutely necessary, recognizing that each additional instrument is a positive source of infection involving additional exacting care; strives to operate with deliberate rapidity in order to abbreviate anesthesia and lessen shock; relies upon special methods which have been evolved, tested, and approved by experienced pelvic surgeons in controlling hemorrhage, cleaning the peritoneum, and securing drainage; and reduces all ligaturing and suturing to a standard of simplicity with accuracy and efficiency. To accomplish the results required by the established standard of modern pelvic surgery those who practise in this branch should acquire a thorough knowledge of the physiology and pathology of the pelvic organs in women, become familiar by practical experience with diagnostic methods so as to have an educated touch, and by training at the elbow of some skilled operator, master the operative technique sufficiently to do accurate and uniform work. This is the sum total of my contention. The pelvis is not the field to learn surgery without great sacrifice, and a thorough training in general surgery does not fit one for the practice of pelvic surgery. When this fact is disregarded, the results will demonstrate its verity.

It is doubtful if in any branch of medicine or surgery so much of contention and opposition have been encountered as in establishing the present exalted position of pelvic surgery. By a combination of unfortunate circumstances here was fought the battle of antisepsis and asepsis. Individual antagonisms of eminent men identified with these questions, and the opposition of a large element of the profession who oppose all innovations which threaten to undermine

the sway of established position and influence, all combined to awaken prejudice, to obscure the truth, and to place both new methods and their advocates in a false light. Fortunately, however, such conditions are of brief existence, and truth and right when persistently and faithfully maintained cannot long be suppressed, even though for a time they be misinterpreted and their advocates misjudged. No other department of medical or surgical practice was ever placed upon such a purely statistical basis; and in no branch of surgery does a single death do so much prejudice to surgeon and surgery as obtains in the practice of pelvic surgery.

The acceptance and application of the advanced principles of pelvic surgery were also obstructed and delayed by appeals to sentiment, which did much injustice to its cause. Just as the old ovariotomists were refused consultation and accused of murder, modern pelvic surgeons were denounced as mutilating women, and performing castration. The latest, and I trust the last, exhibition of this absurd perversion of facts has been exhibited recently in Pennsylvania, whereby it was attempted to misrepresent the scientific application of surgical treatment in intra-pelvic disease in insane women.

It has taken years of insistence to make a large element of the profession comprehend that the uterine appendages are subject to various pathological changes which destroy their functions and disintegrate their structures, impair the health and destroy life, and are only cured by removing the diseased structures with contained septic products. Not taking time and trouble to inform themselves as to the pathology and results of these diseases, they go on talking of "removing the ovaries" as if any accepted doctrine of modern pelvic surgery justified the ablation either of normal organs or of those capable of being restored to healthful activity.

It is not within the scope of this address to even outline the advances which have recently been made in pelvic surgery. The great discoveries relating to ectopic pregnancy and its treatment, to inflammatory diseases of the appendages, the improved Cesarean section and the Porro operation, the surgical treatment of uterine myomata, have been perfected until they are established in practice. The greatest advance perhaps is the steady progress in simplifying the operative technique so as to effectually overcome sepsis. By doing away with all chemical agents and practising a rigid system

of cleanliness, results have become more perfect and uniform in the skilled hands of the trained pelvic surgeon. It should be the steady and persistent effort of all engaged in this work to attain a standard by which the profession and the laity will recognize that simple opening of the abdomen is not of itself in skilled hands a step of uncertainty and danger. Many lives are lost by denying the patient early operation, because the operation itself is regarded as more dangerous than the disease. It is the danger of sepsis now, as heretofore, which is most formidable and which requires most labor and vigilance to avoid. It requires long training and constant exacting care to eliminate it from the causes of disaster. To place pelvic surgery upon a basis of scientific exactitude and security, demonstrated by results approaching uniformity, is the way in which to maintain and elevate its standard. This can only be done by limiting the work to those qualified for its exacting demands, and such results will be promoted by earlier resort to operation in cases requiring operative treatment. If the surgery of the eye were done so unrestrictedly as is pelvic surgery at the present time by general surgeons, it is doubtful if the people would seek relief from cataract with as little hesitation as women now do for ovarian tumors. The penalty of contaminated instruments and hands is more severe in peritoneal contact than in the eye, and the necessity for special technical knowledge and skill quite as absolute.

The highest conception and appreciation of a high standard of special skill in pelvic surgery obtain with the educated general practitioner. The conscientious, well-informed general practitioner is the natural associate and colleague of the specialist. The general practitioner, as a rule, determines the necessity for operative interference and shares the responsibility of the surgeon's work. It is to his interest in every way that the work be most perfect and the results the best. He shares the success of the specialist, and incurs with him the inevitable penalty of failure. The general practitioner is of necessity a student of the progress of pelvic surgery. He cannot afford, for example, to permit the woman with ruptured tubal pregnancy to lie bleeding until death quickly ends the scene. It is his imperative duty, as also in his own plain interest, to recognize the condition and call the skilled operator to secure the bleeding vessel in time.

In conclusion, there cannot be other than satisfaction in the present

exalted position of pelvic surgery, and established confidence in its future. The day of probation is past, and both the profession and the public are realizing more and more the substantial results of skilled work. The responsibility resting upon such surgeons as compose the fellowship of this Association cannot be overestimated. To counteract the direful results of dirty and incomplete work; to establish confidence where doubt and misgivings exist; to perfect and improve methods in use and extend our knowledge; to encourage the cultivation of special skill; to diffuse the advanced principles of this brilliant branch of our science among the profession everywhere, all with a view to saving life, restoring health, and promoting the welfare of our race—these are the objects and purposes of our organization.

INTRA-UTERINE ASPHYXIA: WITH REPORT OF THREE CASES.

By GEORGE F. HULBERT, M.D.,
ST. LOUIS.

Those who have had the experience of believing and declaring that the child *in utero* was living and that everything was all right, and have looked forward to a happy termination of the parturition then in hand, may possibly from time to time realize the chagrin and sense of defeat, when, upon its birth, the child is found to be practically dead—yet not dead, for the heart still beats with a strong but slow pulsation. Every effort at resuscitation is resorted to; one is cognizant of the fact of air penetrating and distending the alveolar spaces, evidenced by the increased vigor and rapidity of the heart pulsations; and yet, in spite of that, after long-continued effort, we gradually see slip through our hands the remaining spark of life, and the child is, in fact, quite dead.

It having been my good fortune, or misfortune, to have three experiences of this character occurring in my obstetrical work, I deemed it possibly of interest, and hope it will be of some value and satisfaction to those who have had, or may have, experience of this kind, to peruse these cases and draw their deductions therefrom.

A similarity of circumstances and conditions appertaining to the child, as well as to the mother and to the character of the labors, and the fact that the normal limits were not apparently encroached upon in any respect, as well as the fact of the peculiar condition, briefly detailed above, has emboldened me to call attention to the conditions and to place on record these cases, not that they are especially new, or that many others may not have had the same or like experience; the fact remains, however, that the literature does

not abound with information, or present anything specially calling attention to the class of cases under consideration.

The first case was delivered in a perfectly natural way, by natural forces; the two subsequent ones were made instrumental deliveries advisedly, simply for the reason that I felt the possibility of a repetition of the first. In all of them I am assuredly positive that I heard the fetal heart not longer than half an hour before delivery was accomplished—heard it distinctly, but somewhat weakened in its force. At the time of delivery, in all, the appearance presented by the children as they came through the vulva was one of extreme pallor, with slight, if any, evidence of cyanosis, save a deepened tinge of the lips, with absolute muscular relaxation; there being apparently no response on the part of the muscles to any irritation that might be made. The heart was pulsating at the rate of from forty to fifty per minute. The usual methods of artificial respiration were resorted to in all, to the extent of introducing the catheter into the trachea, and thereby insuring a passage of air into the bronchial tree and alveolar spaces. That the air did penetrate was further evinced by the slight crepitus, easily heard during compression of the chest in the expiratory part of the respiratory act. Artificial respiration was maintained until the heart ceased beating; until it ceased to respond to the stimulus presented by the aëration of the blood by the artificial respiration. In none of them were there any external evidences of pathological conditions, development having been well accomplished. The umbilical cords were not without the normal limits, and it was only when the placenta was reached that there were any conditions present that might possibly account for the peculiar condition of the children. Here, in all three of the cases, there were found blood-clots occupying the placental surfaces in over half of their area. These clots were well formed, intimately attached to the placental tissue, and smooth upon the uterine side. There was nothing indicating the fact that the clot had been torn from the uterine surface, but rather that placental separation had taken place and the clot had formed and become adherent to the placental tissue. So far as the mothers were concerned, they were in average good health—the first, a primipara; the last two, multiparæ. The labor was not over twelve hours' duration in each, and presented nothing attracting special attention, outside of the fact that the first

was one of those cases in which the form of delivery was what might be termed "piston-rod," the head being forced down to the perineum at each pain, promptly receding to the brim upon the disappearance of the pain. This was frequently repeated, so much so that I seriously contemplated applying the forceps, and regret that I did not, in order to enable the head to catch beneath the symphysis. The character of the pains was not sustained and vigorous in any of them, but rather short and inefficient. In none of these cases was chloroform used; and in only one—the first—a rectal injection of twenty grains of chloral given during the first stage. The element of compression upon the head was not at all excessive and would not have attracted attention.

In the last two cases there was no pulsation appreciable in the cord; in the first case I have no record of this fact. The children were separated from the mothers immediately, and in the first a small amount of blood was permitted to flow through the severed end of the cord. Unfortunately, in none of them did I obtain a post-mortem, and, as before stated, the only anatomical lesion that I can testify to is the presence of the blood-clot occupying an extensive part of the area of the placental surface. There was only a moderate amount of the amniotic fluid following the birth of each child. In the first two cases dilatation was well advanced before the membranes ruptured; in the last case, rupture occurred at the beginning of dilatation. The points for consideration in the above are:

a. The presence of the fetal heart pulsations so soon before delivery.

b. The normal character of the labor.

c. The extreme pallor and relaxation of the child at birth.

d. The presence of the cardiac pulsation after delivery.

e. The absence of any attempt upon the part of the child to perform the respiratory act.

f. The response upon the part of the heart to the benefits of accomplished artificial respiration.

g. The anatomical conditions presented at the placenta.

The presence of the condition "*a*" is, and justly can be, considered one of the evidences of safety, as far as the child is concerned. That the conditions presented in the subsequent developments in these three cases could be accomplished in half an hour

is a possibility, but hardly a probability. The practical conclusion to draw at this point is, that there was going on, or had been going on, a gradual separation of the placenta from the uterine surface and the development of this clot without any outward manifestations in the way of an accidental or concealed hemorrhage. There were none of the symptoms presented by the mothers which are usually considered to indicate this state of affairs. The only variation from the normal was, as stated before, the evident weakening of the force of the fetal heart's action. I testify to this as a fact appreciated by me in the repeated examinations made from the beginning to the time when this loss of strength became apparent. The conclusion we draw here is, that the possibility of placental separation may be determined by the evidences of weakening fetal heart vigor developing during the course of delivery, even though there may be no external evidences in the way of hemorrhages, or subjective symptoms in the way of sudden or severe localized pain. It simply emphasizes the necessity for judicially repeated examinations in regard to not only the presence of pulsation of the fetal heart, but to the character of its action, making comparison from one examination to another.

Under "*b*" we have classified these patients as presenting what may be termed normal deliveries, and yet there was an element of incompetency and inefficiency in the character of the uterine contractions, in that unnecessary repeated efforts were made to attain the usual and necessary results. It is possible that in this fact of inefficiency in the character of the pains lies an explanation for the premature placental separation, for it is well known that inefficiency in uterine contractions only too frequently means localized unrhythmical areas of contraction, and during the course of the delivery these more or less localized areas, in contracting, have so disturbed the placental attachments as to break and separate them; for it is easy to conceive that the area of contraction may possibly occupy one particular part of the placental surface, whereas the area of relaxation may occupy another, and at the same moment, and that necessarily there must be more or less irregular traction brought to bear upon the tissue, insuring adhesion of the placenta to the uterine wall.

Certain it is, that as far as the normal concept is concerned, the element of compression or long-continued compression cannot be

accepted as contributing to the conditions presented by the child. The conclusion that we draw here is the positive influence of irregular areas of contraction, being a contributory cause to premature placental separation; and taken in conjunction with the conclusion drawn from the conditions presented in "*a*" may be of considerable importance and value in the future conduct of the delivery.

The conditions presented under "*c*," to my mind, simply exhibit the final stage of asphyxiation, in that the vigor and vitality of the child had become so profoundly affected that the nerve centres failed to respond to the usual stimulus, all-sufficient in the healthy living child at birth; and we have simply left enough vitality for the time being to perpetuate and continue the heart action. I conceive that as far as the nervous system is concerned, it is a general systemic condition; this is only too apparent in the extreme and persistent pallor and profound and permanent relaxation of the voluntary muscular system. I do not see how we can account for this state of affairs on any other hypothesis than that it was asphyxia, gradually brought about by the placental separation. This, possibly, of itself would not be sufficient to accomplish such a profound degree of asphyxia as to cause the conditions presented; but with this lesion present, with this much support taken away from the child *in utero*, the occurrence of the subsequent compression, which under ordinary circumstances would be natural and normal, and this continued only within normal limits, is sufficient to have consumed the inevitably lowered vitality evinced in the change of the character of the fetal heart pulsations, and thus would give rise to the conditions presented at birth.

The conditions presented under "*b*" clearly establish the fact that somewhere there was resident and remaining, vitality sufficient to carry on cardiac action; and let it be understood, that the character of this cardiac pulsation was what would be considered good and sufficient for the propulsion of the blood from the systemic channels. By those who have witnessed this state of affairs and have examined a child in this condition, the heart acting at the rate usually observed (of from forty to fifty per minute, steady and regular), it will be understood that my purpose in resuscitation would be strengthened—that I should feel a certain degree of hope and look forward to a happy termination, providing

successful efforts were made to introduce air into the lungs. This hope was readily increased by responses, positive and heartily appreciated after each *séance* of artificial respiration, for almost immediately did the cardiac pulsations increase in rapidity, and finally attain a normal rate and vigor; yet at no time in any of these children was there the slightest response toward a relief of the conditions mentioned under "*e*"—namely, an absolute want of respiratory effort on the part of the child. The only positive conclusion or deduction to draw from these two conditions being present was that, as far as the respiratory centres was concerned, irritability had been absolutely annihilated, and the nerve tissue had reached that state where the possibility of functional activity was gone. Certainly, with the conditions presented by "*d*" and "*f*" there was somewhere remaining, in the organism of the child, sufficient vital energy, or nerve centers sufficiently active to respond to the invigorating influences presented by the artificial respiration. Exclude, as we must, the respiratory centres from any part in this evidence of remaining vitality, we are narrowed down to those situated within the cardiac muscle itself; for, bearing in mind the fact of the dual function of the pneumogastric, it is hardly rational to conclude that the invigorating influence could be carried so far distant as it would necessarily have to be in order to influence the cardiac centers situated at the origin of this nerve. For, if the nutritive changes have been so profound as to influence the respiratory centers, certainly the presumption would be that the not far distant cardiac centers, or those centers presiding over the cardiac action in the origin of the pneumogastric nerve, would remain active. Hence, the only possible explanation we can offer is, the artificial respiration aërating the blood—which must necessarily return into the heart, thence through the aortic valves, thereby insuring fresh arterial supply to the cardiac tissue through the coronary arteries—in this way maintained the cardiac activity. That this could be long continued with the assumed conditions at the more distant centers is not at all probable, and the time must come sooner or later when, even here, the nutritive changes must take place which established the molecular death of the child.

Somatically, as far as the systematic nerves and muscular systems were concerned, the children were dead; molecularly speak-

ing, they were living—only at the heart. It has occurred to me, and probably also to those who may peruse this report, that the explanation of the peculiar condition of these children might be that there was a fault or lesion in development, and that, regardless of any other influences, these children would have presented the same conditions, and the results would have been the same, whether the placental attachments were maintained or not. This is simply jumping at conclusions, and is, scientifically speaking, at variance with the testimony at hand. True it is that we have none of the evidences that might possibly be revealed in a post-mortem and microscopical examination of the parts concerned in the conditions presented, and it is only the want of this that prevents me from speaking authoritatively in regard to the proper interpretation to place upon the phenomena presented. Notwithstanding, in our search for the truth, scientifically speaking, we can only be guided by the evidence and testimony at hand, at the same time freely confessing what we lack in order to establish beyond peradventure that we have arrived at the truth. Hence, our interpretation and conclusion is, that the conditions presented under "*d*," "*e*," and "*f*," are to be accounted for as explained above. Finally, under "*g*," we present the only single tangible evidence as to the cause of the effects attained. How long a fetus *in utero* can live, and how much of the area of the placental tissue is absolutely necessary for its life, can justly be a subject for differences of opinion. Mathematically speaking, if one-half of the area of the placental attachment becomes inoperative, one-half of the vitality of the child up to the normal standard should be sacrificed; two-thirds in area of placental separation would reduce the possibility of a normally sustained vitality two-thirds. In these cases fully two-thirds of the placental area was involved; hence the child probably only had one-third of its capacity for existence present during part of the process of parturition.

The moment at which this separation is begun is undetermined. The only point that can be given in evidence is, that only up to within half an hour of delivery were there positive evidences of some disturbances having taken place, influencing the functional vigor of the fetal heart. After that time up to the point of delivery were probably brought to bear the final influences which were sufficient to culminate in the conditions observed. Artificial respiration was

continued for from one-half to three-quarters of an hour, when the heart ceased beating. The practical conclusions and lessons to draw from the foregoing, or possibly the query to propound is: "Is it possible to appreciate the conditions necessary to establish intra-uterine asphyxia, and the best and probable means to resort to in order to save the child when these conditions become operative, or reasonably inferred?" The only symptoms heretofore in my experience which I have felt presented the possibility of this condition were those ascribed to accidental or concealed hemorrhage—namely, more or less persistent loss of blood through the vagina, or sudden and severe localized pain at that part of the uterine globe at which the placental souffle presents its greatest intensity, with more or less faintness and prostration manifest upon the part of the mother. Evidently, from the above, we must acknowledge that intra-uterine asphyxiation is a possibility without evidence of this character, and the only symptoms which may suggest the presence of this danger may be a gradually developing cardiac weakening in the fetal heart sounds, associated with incompetency and irregularity in the uterine contractions, and to the character of the sounds of the fetal heart must we largely turn for evidence. Not only must there be a disturbance in the vigor of the cardiac sound, but also in the rate, and it rationally must present the same characteristics we should expect in asphyxia *ex utero*—namely, a decrease gradually and steadily in the pulse rate. Hence, where we find during the course of parturition a gradually weakening fetal heart, with a decrease in the rate associated with incompetency and inefficiency of uterine contractions, although without any other visible signs of placental separation, we are justified in assuming such condition to exist. Certain it is, that if we have in association with this condition of the fetal heart the usual symptoms of placental separation, the determination of the possibility or the presence of intra-uterine asphyxiation need not be a difficult problem; for, if the objective evidences were present, such as hemorrhage, sudden localized pain, faintness or prostration, etc., and accompanying this we found, synchronously, a weakening in the fetal cardiac sounds, accompanied with a gradual decrease in the rate, there need be little hesitation in determining that there has been sufficient placental separation to materially influence the vitality of the child. There is one other point which was noted in the symptomatology, but which I am not sufficiently

satisfied with to offer any more than a suggestion toward future attention and observation, and that is change or modification in the placental souffle, whether this sound is produced in the sinuses, situated in the uterine tissue proper, or whether it is produced in that part of the maternal circulation which dips down and comes in contact with the placental tufts related to the fetal circulation, may possibly be an open question, but the evidences at hand clearly show that as soon as placental separation is accomplished, the placental souffle disappears.

Now, this may be due to the fact that part of the maternal circulation, more properly within the placental tissue, is entirely separated; the uterine part having become condensed and contracted, and more or less occupied by blood-clots, would present difficulties in determining at which of these sites the souffle was generated. Necessarily, where there would be a placental separation, and a want of a more or less continued hemorrhage from the separated surfaces, we would probably have the same conditions accomplished, not only in the placental part of the maternal circulation, but in a large degree also in the uterine part, in that the blood-channels in the placental portion would be separated in the same manner as would occur at delivery, thereby being cut off entirely, the blood ceasing to circulate through them; whereas in the uterine part there would occur the same tendency toward thrombosis, and from the fact that condensation in area did not occur on account of the distention of the uterine walls remaining, this clot would necessarily be more extensive and must necessarily penetrate more or less deeply into all the sinuses, which had become inoperative on account of the separation; so that rationally we should infer that there ought to be some modification in intensity, at least in the placental souffle. In the second case, it seemed to me as though I appreciated a modification of this character; but from the other fact that the physics of the condition were fully recognized, and from the fact that no record on this point is made in the first and third cases, I am slow to say positively that any modification existed in this particular phenomenon. I simply present the physics as they appeared to me, and call attention to the possibility, and trust it may serve to elucidate the fact as to the modification in the intensity of the placental souffle, if such does exist. It is to be hoped that others who may have had experiences of this character, or who may in

the future meet these conditions, will consider the explanation of intra-uterine asphyxia of sufficient importance to make a careful and accurate report of all cases that may come under their observations. I simply in the foregoing desire to call attention to the condition, and, as far as I am able, present testimony bearing on the subject, and "give reasons for the faith that is in me."

DISCUSSION.

Dr. J. Henry Carstens, of Detroit.—Mr. President: The paper just read by Dr. Hulbert is an exceedingly interesting one. Probably we all have met with such cases. I recall one case in particular that made a strong impression upon me at the time. It was that of a woman about forty years of age, the mother of three or four children. They were all stillborn. She was attended by an excellent obstetrician. When she again became pregnant he asked me to help him at her confinement, stating that the woman was anxious to have a living child. I assisted him at the delivery. Labor was apparently normal, but in order to leave nothing undone, after the os was thoroughly dilated we applied forceps. She had a slightly contracted pelvis. We applied the forceps quite easily, after thorough dilatation of the os, without any injury to the mother and apparently none to the child. The child was delivered, and we worked over it most faithfully, making use of all the usual methods, but we could not get any breath into it. It was simply impossible to do so. The explanation of such cases, as given by Dr. Hulbert, I think is the correct one.

In a great many of these cases, when called in late, we find them in charge of midwives or irresponsible practitioners, who have, perhaps, given large doses of ergot, and I have in a good many cases attributed intra-uterine asphyxia to the administration of large doses of ergot. In the particular case to which I have referred nothing was given, so that ergot cannot be charged with the cause in that case. At the time we considered it was due to some disturbance of the centers of respiration. Dr. Hulbert thinks it was due to pressure or, perhaps, an effusion in the brain. We did not pay very much attention to the placenta on the occasion referred to.

It is well for us that these cases have been reported. It gives us something to think about, and teaches us to look for that peculiar

condition of the placenta which has been mentioned. Where we get a weakening of the heart's action, we also get a weakening of the placental bruit, which seems to me to be indicative of loosening of the placenta. Then it is time to interfere with instruments and rapidly effect delivery of the child. Instead of leaving the case to Nature, as many do, I think it best to promptly interfere with forceps and deliver the woman within as short a time as possible.

Dr. John M. Duff, of Pittsburg.—The paper is scientific and ingenious, and no doubt brings out the facts as they exist in many of these cases. However, we may have cases of concealed hemorrhage, in which the child may be born living and apparently strong. I have had several cases of the kind that I can call to mind. On the other hand, I have had some in which the child was asphyxiated. I desire especially to call attention to the fact that the cause of stillborn children in many cases—where apparently a short time before birth the child was well, with the heart beating properly—is due to cerebral hemorrhage. I have seen two post-mortems within the past few years corroborative of this statement. The labors were apparently normal. The physician in charge could not account for the deaths of the children. The pains had been normal in force and regularity. He was very much exercised as to the cause of the deaths of the infants. He procured autopsies and found that death in each case was due to cerebral hemorrhage.

Dr. John C. Sexton, of Rushville.—We must all admit that Dr. Hulbert has given us an excellent paper, and the points presented are worthy of our closest attention and observation. It is just as much a credit to the obstetrician to save the lives of these little fellows coming into the world in the distressing condition mentioned as it is for the surgeon to save life by a celiotomy. I think the instructions laid down by authors in our text-books and by teachers on obstetrics for the resuscitation of children are quite meagre. They are not as full and thorough as they should be. One of the most learned articles I have ever read from anyone was by Dr. Lusk, not a year ago, in the *American Journal of the Medical Sciences*, on the "Resuscitation of Stillborn Children."

The paper of Dr. Hulbert directs our attention to intra-uterine asphyxia in a manner that I have not seen presented elsewhere. It is possible that other writers may have written on this subject at some length, but if so I have not observed it. I have found placental clots not infrequently where there was no asphyxia. I want to ask the essayist to tell us in the three cases where he found blood-clots, the nature and character of them, *i. e.*, whether they were dark, soft, or otherwise. I think some light can be thrown upon the subject by the

character or the appearance of the clots. These cases are very instructive to me, and I have sometimes doubted whether they were cases of intra-uterine asphyxia.

In regard to the failure of the fetal heart as an indication for the application of forceps, I think it is one of the strongest points for its use. I think the stethoscope should be used also. We should study the fetal heart. In case of its failure, or if we have a sign of weakening or depression of the fetal heart, it is our duty to resort to the use of the forceps. I have always considered it so. I believe we can save children in that way that otherwise would be lost.

Dr. Eugene Boise, of Grand Rapids.—I did not intend to say anything on this paper, but the importance of the subject must be my excuse. While the author was reading the thought occurred to me whether the condition described should be called asphyxia—whether it was not in reality syncope from hemorrhage. The large amount of surface of the placenta obliterated by the clot prevents the child receiving sufficient arterial blood from the mother to maintain life, hence it is actually dead when it is born. The nerve centres are completely obtunded and dead; the respiratory centre cannot be awakened, and the vasomotor, which lies close to the respiratory centre in the medulla, is also dead by reason of the lack of blood it should have received from the mother. That the heart continues to beat must be explained by the automatic character of the ganglia of the heart, because we all know that the ganglia which preside over the action of the heart muscle maintain their vitality after death of the rest of the body. The slowness of the heart beat, which we naturally attribute to the influence of the pneumogastric nerve (which is inhibitory in its action), is attributable to the failing action of the cardiac ganglia. That they can be aroused into renewed activity by artificial respiration is because what little blood there is in the body is oxygenated and carried to the ganglia, and stimulates them, to a certain extent, to action. In order to have continuous vitality of these ganglia they must receive renewed nerve force from the vasomotor centre. They are simply storage batteries, if I may so term it. After the centre, from which the nerves emanate, is dead, the cardiac ganglia must give out after a short time. The only way to resuscitate a child from this form of intra-uterine asphyxia would be by transfusion of fresh, good blood. Whether that is possible or not is a question, because I think the child is dead when it is born. The pallor indicates the cause of death. It is not to my mind asyhyxia, but syncope virtually from hemorrhage.

Dr. Hulbert (closing the discussion).—There is still one other point not mentioned in my paper that I desire to call attention to now,

and that is the possibility of this condition developing with practically no blood-clot being present upon the placental surface. If we concede that this condition is accomplished by a gradual, slow separation of the placental surface from the uterine surface, we can also readily understand how there could be a probable blocking of the uterine sinus, so quickly accomplished by the clotting of blood that it would practically prevent hemorrhage to any great extent, and there would probably be developed there only small foci of blood clots on the surface. As I conceive it, separation is so gradual, brought on so easily, and the natural relations are disturbed so slightly, that there is a possibility of these sinuses becoming blocked up immediately with only a slight loss of blood from the open mouths. I believe it is possible for intra-uterine asphyxia to occur in this way, so that at the birth of the child you would have an apparently normal condition of the placenta, or the placenta might have been very materially separated during the process of parturition, and the blood-clot forms on its surface as reported in my paper.

Now, in regard to the character of the blood-clots: They all presented the same characteristics. They were well organized and of a dark venous hue, that part attached to the placental surface being intimately connected with the fibrous uneven surface of the placenta; whereas the part presenting to the uterine tissue was absolutely smooth without any irregularity. It simply suggests this, that as the clot forms it attaches itself to the most irregular surface, and on account of the repeated passage of the uterine muscle over the surface by the uterine tissue there is presented this smooth surface, because at that point you will have more or less repeated movement accomplished in the contraction and relaxation of the part of the uterine tissue that has been separated from the placenta.

And yet another point is with regard to saving these children. I do not believe we will ever succeed in saving a child when this condition is developed, unless we resort to rapid delivery, for the simple reason that the conditions are already accomplished just as soon as we are enabled to appreciate the disturbance present in the fetal heart. I believe the distant centers have been already profoundly affected, and for that reason we have a peculiar condition presented in the fetal heart. From that time on we rely upon the vitality or nervous energy evolved from the ganglia resident in the heart muscle.

The view advanced by Dr. Boise in regard to the nervous energy being supplied from the central ganglia to the ganglia situated in the heart muscle is entirely new to me. I believe the ganglia evolve the own energy, and that they draw their energy exactly as the other

centers do from the pabulum presented by the blood which is offered and supplied to the entire tissues. They create the energy themselves.

In regard to these cases being due to cerebral hemorrhage, I concede that cerebral hemorrhage is a cause of stillborn children, but where it is the factor we have got to have the element of long-continued pressure either by instruments or by the head of the child passing through the strait of the pelvis. In the cases I have reported we did not have that. We had conditions that were practically within normal limits; in one case the "piston-rod" variety, the head being forced down to the perineum at each pain, and promptly receding to the brim upon the disappearance of the pain; in the other cases instruments were used for the purpose of facilitating delivery with the hope of saving the child. So I hardly believe that the three cases could be accounted for on the ground of cerebral hemorrhage.

As to the correctness of the statement of death being caused by intra-uterine asphyxia, and the probability of there being syncope from hemorrhage, as suggested by Dr. Boise: if it was syncope that the children died from the blood must necessarily have come from the fetal circulation. Unfortunately, I did not appreciate the importance of these cases until I lost the specimens by which I could make a microscopical examination to determine the fact as to whether rupture had occurred in the placental circulation. But as I took the clots and peeled them off the placental surface, I could see nothing that would lead me to think that there was anything there but perfectly natural placental tissue. The clot did not have the appearance of coming from the placental tissue, but of being placed upon it and becoming attached to the roughened surface. There was the peculiar membranous appearance presented on the surface of the placenta on removing the clots. If you have hemorrhage present from the placental tissue, you have the characteristic spots situated deeper in the tissue of the placenta. There was no evidence of that kind in the placental tissue, consequently I was forced to the conclusion I had uterine asphyxia.

Regarding the pulse-rate, I will add in heart failure the pulse-rate is rapid; in asphyxia it is decreased steadily and persistently until finally it stops.

A STUDY OF THE PATHOLOGY OF PLACENTA PREVIA.

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Paul Dubois once said: "If ever I should renounce the practice of obstetrics it would be on account of the hemorrhage." The great fatality following this accident has always been recognized, and the best efforts of obstetricians have been directed to ferreting out the causes, studying the anatomical and pathological conditions, and building up on the results of their investigations a line of prevention and treatment. As a result of the more correct appreciation of the principles that underlie the causes of hemorrhage before, during, or after labor, or the loss of blood attending premature expulsion of the ovum, faulty implantation of the placenta, or atony of the puerperal uterus, the loss of life from hemorrhage has steadily decreased. But whilst the treatment of abortion and post-partum hemorrhage is no longer a theme for discussion, since the anatomical conditions are well recognized and the treatment consequently established on a satisfactory basis, the most dreaded form of intra-uterine hemorrhage, viz., that accompanying placenta previa, is far from being definitely settled, in regard to both pathology and treatment. We need only recall the discussions that have been and still are waged on such questions as the following: the definition of accidental and unavoidable hemorrhage; whether the loss of blood be due to contraction or distention of the uterus; hence, whether hemorrhage occur during the pains or in the intervals between them; whether the source of the effused blood be from the placental surface or from the uterine wall; whether separation of the placenta be caused by its being torn from the uterus, or whether the uterine wall be drawn from the placenta; whether the uterus grow more rapidly than the placenta, or the placenta out-

strip the uterus in its growth; whether the utero-placental site be subject to excessive or defective development; whether, in the treatment, with the onset of hemorrhage, our efforts should be directed toward deferring labor to the usual term or we should induce it prematurely. These and many other questions have been and still are fruitful themes, whose champions on either side belong to the best of our authorities. Only on one point are all agreed, namely, the necessity of arresting hemorrhage as speedily as possible in the interest of both mother and child.

It is not the object of this paper to offer any new theories or modes of practice, but simply to review in a succinct manner the present state of the pathology of this complication and, if possible, to harmonize some of the conflicting views.

It need hardly be stated that the term "placenta previa" does not express the pathology or principal clinical feature of this anomaly of pregnancy. It might as well apply to a prolapse of a placenta, with a previously normal insertion, as a primarily low attachment of this embryonic appendage to the uterine walls. The simple fact that the so-called after-birth was located before the child (*filius ante patrem*) gave rise to the expression.

Guillemeau, in 1609, was probably the first who recognized the abnormality of a placenta lying before, but he regarded this accident simply as a prolapse. It was not till fully a century later, in 1709, that Schacher demonstrated by an anatomical section the actual attachment of the placenta to the lower portion of the uterus, although Paul Portal some years previously had mentioned the occasional low insertion of the after-birth. With the demonstration first given by Schacher the fixation of the placenta to the lower pole of the uterus was recognized as the essential feature of placenta previa. Omitting for the present minor points of discussion, *the placenta may be said to be previa when it is inserted wholly or in part to that portion of the lower uterine segment which is subject to distention in pregnancy or in labor.* In accordance with this definition the locality and amount of implantation will further determine the variety or form of placenta previa.

The typical variety is that known as placenta previa centralis, in which placental tissue covers the os internum uteri over its whole periphery. To be accurate, the centre of the placenta should correspond to the centre of the os; this latter particular, however

is usually not insisted upon, it being sufficient that the internal os is with its whole circumference covered by placental tissue. A better term therefore is "placenta previa totalis," or complete placenta previa. By lateral or partial placenta previa is meant a condition in which placental tissue covers the os internum only in part, so that whilst a portion of the placenta overlies the os, the larger part is attached to the side of the uterus. It is therefore an incomplete placenta previa. By marginal placenta previa is understood simply a low insertion of the placenta, but sufficiently high that its margin reaches to but does not cover the os internum. Hence this insertion is also lateral, on account of its anatomical position with reference to the uterus, and for this reason perhaps deserves that name more properly than the previous variety described. Hence it has been described as synonymous with the former by some authorities, although, as we shall afterward see, the clinical features are entirely different. I lay stress upon this fact because the terminology of lateral and marginal placenta previa is apt to cause some confusion, some authorities regarding the two as synonymous, others describing them as two distinct varieties.

According to my opinion the terms central and lateral—the former on account of the rarity of its occurrence and the latter on account of the inaccuracy of the term—should be dropped and the terms *placenta previa totalis*, or complete placenta previa, and *placenta previa partialis*, or incomplete placenta previa, be retained. The classification mentioned above, central and lateral, has been made ostensibly in conformity with the anatomical situation of the placenta, but in reality it has been made more in reference to the clinical importance to designate the amount of hemorrhage that will follow placental separation. In this respect the terms central and lateral are misleading; the anatomical differences are frequently unimportant, and I agree with Veit when he says that an anatomist would never have made such a differentiation. He says:[1] "Theoretically all cases in which, with complete dilatation of the os, placental tissue may be felt in the entire circumference, and the edge of the membranes can nowhere be reached, are to be characterized as central placenta previa. If, with the same dilatation of the os, only a portion or small edge of the os is covered by placental tissue it is spoken of as lateral or marginal." It will be seen here

[1] Handbuch d. Geburtshülfe, ed. P. Mueller, vol. ii. p. 67.

that only two varieties are described, the last, lateral and marginal, being regarded as synonymous, or, at least, possessing but a slight difference in degree only. It is also evident that the same terms are not applicable with the varying distention of the os internum: thus, for instance, a total (central) placenta previa, in which nothing but placental tissue can be felt through the os as yet undilated, may become partial or lateral with full dilatation, at which time a portion of the membranes may also be detected with the placenta; *per contra*, a so-called marginal placenta previa, which may escape detection in the first instance, may appear as overlying the os to a considerable extent when dilatation is complete.

Whilst, therefore, the onset of hemorrhage, the amount of blood lost, the time of its occurrence, are all of the utmost clinical importance, we can arrive at a true understanding of the facts only when we approach the subject from an anatomical standpoint. The normal development of the uterus in pregnancy, with its contents, the impregnated ovum, must first be thoroughly understood before we can fully appreciate any deviations from the normal.

In this connection the study of the development of the lower segment of the uterus as inaugurated about two decades ago by the investigations of Mueller, Lott, and especially Bandl, has thrown new light upon the physiology of labor as well as the relationship of the abnormally implanted placenta to this portion of the uterus.

Formerly the pregnant uterus was considered merely as a hollow muscular organ divisible into two parts, the body and cervix; the upper portion, the body, was the contracting, whilst the lower, the cervix, was the dilating part. Separation could take place only by contraction of the muscular wall, if the after-birth was implanted in the upper region; or by dilatation, if inserted upon or near the cervix. As contraction of the uterus, under normal circumstances, occurred only during labor, detachment of the placenta previous to this period could happen only through accident; but if the placenta was abnormally inserted over the cervix, detachment of this structure must necessarily occur during the dilating period of the cervix in labor.

This explanation was deemed self-explanatory and all-sufficient, and upon it Levret, Rigby, and others of their time built the dogma of accidental and unavoidable hemorrhage. In his classical work on *Uterine Hemorrhage* (fifth edition, 1811, pp. 15, 16) Rigby says:

"When a flooding comes on before the delivery of the child, it is obvious that the separation of the placenta must be owing to some accidental circumstance, to violence done to the uterus by blows or falls, to some peculiar laxity of the uterine vessels from badness of habit, or fever, or to some influence of the passions of the mind suddenly excited, such as fear, anger, etc.

"But from the uncertainty with which Nature fixes the placenta to the uterus, it may happen to be so situated that when the full term of pregnancy is arrived and labor begins, a flooding *necessarily* accompanies it, and without intervention of any of the above *accidental* circumstances; that is, when it is fixed to that part of the womb which always dilates, namely, the collum and os uteri, in which case it is very certain that the placenta cannot, as before described, remain secure till the expulsion of the child, but must, of necessity, be separated from it in proportion as the uterus opens, and by that means a hemorrhage must *unavoidably* be produced."

From this definition those who advocated the doctrine that the cervix remained intact until the beginning of labor must look upon every hemorrhage that occurred before this time as accidental, even in a case of placenta previa, whereas those who believe in the actual shortening of the cervix in the latter months of pregnancy explained the hemorrhage that occurred at this period in placenta previa satisfactorily by the dilatation of the os. When it was demonstrated, however, that the cervix remained closed to the end of pregnancy, no physiological reason could be adduced for the occurrence of hemorrhage previous to labor. Duncan, who entertained this view, therefore logically included all hemorrhages previous to labor among those accidental. Thus confusion arose and made the definition, as far as placenta previa was concerned, no longer tenable. Moreover, it was evident that, for a placenta to be torn from its site when normally implanted, there must be some predisposing cause to facilitate separation; but in placenta previa its structure is apt to be abnormal in consistence as well as in form, separation is more likely to occur, and thus the dividing lines between accidental and unavoidable hemorrhages are obliterated. For this reason, on account of the confusion which must necessarily arise, the definitions given by Rigby and others have lost their original significations, and hence have been almost generally abandoned.

According to Duncan, the lower portion of the uterus in advanced

pregnancy represents part of a hemisphere, the lower pole of which is formed by the os internum. In labor this segment of a sphere is converted into a cylinder, by means of which first distention and then separation of the placenta takes place. The degree of hemorrhage will depend upon the extent of placental separation, and this again upon the amount of uterine distention. But as Duncan held that dilatation of the inner os began only with parturition he could explain the hemorrhage of placenta previa satisfactorily as it occurred in labor, but not those hemorrhages that took place during pregnancy. With the rehabilitation of the theory that the cervix expanded during the latter months of pregnancy, as reasserted by Bandl, who maintained that the lower portion of the uterus was in part made up by the upper portion of the cervix, the hemorrhage in pregnancy was again explained. When Bandl's theory, however, received a severe shock by the demonstration that, in many instances at least, the lower uterine segment was lined with uterine decidua and not cervical mucous membrane, and that therefore the cervix did not contribute to the formation of the lower uterine segment, the original question was once more again brought forward. From all this it is evident that the pathological anatomy of placenta previa is most intimately linked with the morphology of the uterus, and every investigation of the subject must presuppose a definite understanding of the latter.

For this purpose let us call to mind certain anatomical facts.

The uterus of gestation is divisible into three parts, anatomically and physiologically distinct from each other when pregnancy nears its end.

The body of the uterus is divided by the contraction ring, or ring of Bandl, as it is more familiarly known, into two parts, the cervix forming the third. For the present it is immaterial whether the supra-vaginal portion of the cervix be included in the formation of the lower segment, or whether it be looked upon as constructed of corporeal uterine tissue exclusively; a differentiation of the upper from the lower segment by that aggregation of muscular fibres known as Bandl's ring is an anatomical fact. The physiological function of the cervix proper becomes operative only during the progress of labor itself; hence we may abstract from this part of the uterus and turn our attention only to the development of the corpus or body of the womb. This is the more rational, as the

decidua vera is limited below by the os internum, and thus this cavity is exclusively concerned in the development of the ovum.

Besides the division into upper and lower segment, the former may again be subdivided into the upper and middle segments respectively. Thus we have three zones—the upper, middle, and lower—or, as they have been termed by Barnes, the fundal, equatorial, and cervical zones. The greatest distinction is to be made between the lower and middle zones, which are physiologically as well as anatomically divided by the ring of Bandl. According to Barnes, the division between the upper and middle (fundal and equatorial) zones seems to be only arbitrary. It is my opinion, however, that here also a physiological if not an anatomical line can be drawn. This is of special importance when we consider the question of the primary implantation of the impregnated ovum. It is well known that when the ovum enters the cavity of the uterus it is most apt to be caught in a fold of thickened decidua somewhere near but *below* the orifice of the uterine ends of the oviducts. In the unimpregnated uterus, it is true, this is very nearly on a line with the fundus; but with the development of the womb in pregnancy the fundus becomes more rounded and enlarged, and the space between the upper wall of the uterus and a line drawn through the utero-tubal openings becomes greater and greater as pregnancy advances. We have therefore a cavity of considerable dimensions in the upper part of the womb. I would, therefore, suggest that all of that portion of the uterine cavity situated above the entrance of the tubes, the uterine ends of the oviducts, be included in the upper or fundal, and that portion situated below this line and above the ring of Bandl be termed the middle or equatorial zone. I consider this distinction important; for the anatomical possibility is given for the attachment of the ovum anywhere to uterine decidua, but its further safety will depend upon the site where the serotina is formed. Normally the ovum is arrested at a spot not far below the entrance of the tubes and above the ring of Bandl. This is evident from the fact that in the great majority of instances the placenta has been found attached to the side of the uterus. Authorities differ whether this be most frequently on the anterior or posterior wall, or to the right or the left side of the womb. If the ovum be caught at a point above or below the narrow belt known as the middle zone we have an abnormality, differing in character according to the site of im-

plantation of the ovum and formation of the serotina. If the ovum strike the most dependent part, which afterward becomes the lower or cervical zone, we will have the lowest insertion of the placenta. If the ovum does not fall quite so low, but at a point near the border line of that ring, which afterward becomes the contraction ring, or ring of Bandl, in which the placenta will invade partly the middle and partly the lower zone, we have a low implantation of the placenta. But in both instances we shall encounter a placenta previa, the situation of the ring of Bandl determining whether it shall be previa wholly or in part. If the placenta remain partly above and partly below this ring (partly in the middle and partly in the lower zone), we have, anatomically speaking, a partial or incomplete placenta previa; if, however, the placental attachment be entirely below this ring, we shall have, anatomically, a total or complete placenta previa. In both instances the clinical phenomena of placenta previa will follow, but differ in intensity. In consequence of the distention of the lower segment in the last months of pregnancy and the contraction and retraction of the middle zone in labor, there will be more or less hemorrhage.

If, however, the placenta be implanted wholly above the ring of Bandl we will have a safe insertion; therefore, also anatomically speaking, a truly lateral implantation of the placenta, but not previa. When the ovum becomes attached to the fundus of the uterus, the placental attachment becomes, of course, *fundal.* But owing to the anatomical relations of the tubes to the cavity of the uterus and the influence of gravity in determining the implantation of the ovum, I regard the fundal implantation of the placenta as very rare. Consequently, although adopting Barnes' description and physiological deductions in reference to this subject in all other respects, I do not agree with him when he says: "The fundal seat is the most natural. It is κατ' ἐξοχήν the region of safe placental detachment." On the contrary, I look upon the extremes of the poles as the most unnatural seat for placental attachment. In the lower segment it is self-evident. In the upper segment there is indeed no danger of hemorrhage, except by accidental separation, but, for the reasons above given, the position is abnormal and rare. From the examination of the rent of the membranes after delivery it may be seen that it is but very rarely just opposite the site of the placenta. Probably in accidental separation of the placenta this would be found more

often, and I would, therefore, request the attention of the Fellows to this point in future investigations. The implantation of the placenta at the fundus, I maintain, is physiologically as abnormal as the insertion over the os, but owing to the absence of those conditions which render the low implantation so dangerous, viz., hemorrhage, no cognizance is usually taken of this fact. The normal attachment of the placenta is therefore, in my estimation, that portion of the uterus which afterward becomes the middle segment or equatorial zone. When the serotina develops wholly or in part below the zone we will have the condition known as placenta previa. It is indifferent if a portion of the placenta be still retained in the upper segment, or the entire circumference of the os be covered by placental tissue; in both is present an abnormal condition, likely to be followed by hemorrhage, the severity of which will increase with the depth of implantation. We conclude, therefore, that it is not so much the question of partial or total implantation as the fact that the placenta develops primarily in the lower uterine segment, that gives it its great importance.

This anatomical fact also accords with the clinical symptoms.

In the early months of pregnancy the area of implantation is very small, the lower uterine segment very short; hence, for a while at least, the placenta will develop in conformity with the growth of that portion of the uterus to which the placenta is attached. With the advance of pregnancy, however, the anatomical changes above described take place in the lower uterine segment. The uterine wall above becomes thicker and prepared for contraction; below it becomes thinner, and this portion of the uterus expands. The placenta, if attached to the lower zone, will, for a while at least, participate in the changes that take place in the wall of the uterus; thus, first, there will be an enlargement at the seat of attachment, then as the lower uterine segment becomes distended the placenta also expands. Finally the limit of expansion is reached, and then one of two things must happen: either, if the insertion upon the uterine wall be unusually firm or extensive, partial rupture of the placental tissue takes place, or, which is more common, separation of the placenta from its base results. In either case there will be hemorrhage, and we thus have the explanation of this cardinal symptom in pregnancy.

In labor, however, the mechanism of detachment is somewhat

different. It is most clearly explained by Schroeder.[1] During labor the largest portion of the uterus is drawn upward, away from the fetus. The contraction ring, or more properly, retraction ring, moves slowly upward over the body of the fetus; in the meantime, everything below this ring, consisting of the lower uterine segment and cervix, becomes distended and assumes the shape of a cylinder with parallel walls, through which the fetus escapes. Therefore, during labor the relation of the fetus to the uterus undergoes a marked change, which is most conspicuous at the site of the contraction ring; above it the uterus is contracted, below it is greatly distended. If the amnion remain intact until the end of the period of dilatation a considerable separation of the uterus from the amniotic sac must take place, uncovering probably one-half of the latter.

In placenta previa, with the preservation of the amnion, this change of position is prevented; with the continuance of dilatation the separation between the wall of the uterus and the placenta must become greater and greater, each pain detaching new portions of placental tissue. This retraction of the uterus from the placenta is made manifest in those cases in which, at the beginning of cervical dilatation, only a small margin of the placenta could be felt; whereas, with dilatation complete, nearly the whole placenta is pushed downward. It is not so much the descent of the placenta as the ascent of the lower end of the uterus that characterizes this change of situation. A constant change of relationship between placenta, uterus, and fetus goes on so long as the placenta can follow the uterine wall in its upward retraction. This does occur if the membranes are ruptured, because then nothing interferes with the placenta following the uterus in its upward movement. Schroeder thinks that entire rupture of the membranes is not even necessary for this purpose, rupture of the chorion alone being sufficient; for then the unruptured amniotic sac, being liberated from the chorion, may retract with the uterine wall. The whole mechanism is thus explained by the three properties of the parturient uterus: contractility and retractility of the upper segment, dilatability of the lower segment.

This explanation of the separation of the placenta is the most plausible and is based upon the idea that the lower uterine segment is a part of the body of the uterus, and is not the result of an un-

[1] Lehrbuch d. Geburtshülfe, 9te Aufl. p. 704.

folding of the cervix, as was formerly supposed. It is generally conceded that true decidua does not form upon the cervical mucous membrane, hence primary implantation of the placenta upon the cervical canal is considered impossible. None of the cases of this nature have yet been positively proved. But if we regard Bandl's ring as the true os internum and accept this theory of placental attachment in the lower uterine segment we must either admit primary implantation of the ovum or placenta upon cervical tissue, or deny the possibility of attachment below this ring. Bandl[1] himself admitted the possibility of low uterine insertion.

With this anatomical demonstration the pathology of placenta previa seemed definitely settled until, a few years ago, Bayer again reopened the discussion by submitting a new theory.

In the first place Bayer[2] accepted Bandl's original view of the formation of the lower segment, namely, that the contraction ring was the true os internum and the lower segment was formed by an unfolding of the upper part of the cervix. He consistently denied the possibility of placental implantation below this ring and claimed that he had never met with a case of placenta previa where the attachment took place in the lower uterine (cervical) segment. He reasoned that if this did happen the woman would bleed to death, because this portion of the womb was incapable of contraction or retraction. As this property resides exclusively in the upper segment, he sought to explain the subsequent spontaneous arrest of hemorrhage after partial detachment of the placenta in a more simple and satisfactory manner. He admitted, however, that this would not explain why hemorrhage in many cases does not occur in pregnancy and why, in these instances especially, the placenta may often be felt through the undilated or but partially dilated os. He was therefore compelled to invent a new theory to explain these latter cases. He assumed different anatomical conditions in different cases of placenta previa, those in which a normal development of the lower uterine segment occurs as described

[1] Bandl at first regarded the contraction ring as identical with the os internum. He afterward modified this view in so far as to look upon Mueller's ring as the lower limit of the cervical mucous membrane, but the muscular wall of the cervical canal he insisted upon still as entering into the formation of the lower segment of the uterus. In accordance with this theory, he conceded the possibility of placental development below the contraction ring, but denied this occurrence below the os internum, an opinion exactly in harmony with the views just expressed.

[2] Verhandl. d. Deutschen Gesellschaft für Gynäkologie, Erster Kongress, Muenchen, 1886.

above, and those in which there is a defective development of the lower portion of the womb. As a result of an examination of some twenty cases he found that in some instances the same conditions prevail as in premature labor, namely, the os internum remains closed until the terminal period of pregnancy and the actual onset of labor, and that in all these cases there was an imperfect development of the lower segment. Hence he arrived at the following conclusion: "A defective development of the supra-vaginal portion of the cervix is a typical phenomenon in placenta previa. In the most dangerous cases the os internum remains closed until the commencement of labor. Consequently, no lower uterine segment is formed previous to this time." He therefore divides all cases of placenta previa into two categories: 1. Placenta previa with development of the supra-vaginal portion, when hemorrhages occur during pregnancy, followed by chronic changes in the placenta; and, 2. Placenta previa with intactness of the cervix but undeveloped supra-vaginal portion. Here hemorrhages do not occur until the onset of labor, and therefore no changes in the structure of the placenta are visible.

Bayer's theory of defective development of the lower uterine segment seems to me quite plausible in those cases in which the placenta is inserted primarily upon the inner os; in other words, in total placenta previa or so-called placenta previa centralis. It is possible that the fixation of the placenta here prevents the expansion of the lower uterine segment. The clinical observation of hemorrhage not occurring until the onset of labor would be in accordance with this anatomical fact.

His observation that the placenta is never attached below the contraction ring, however, is not in accordance with anatomical investigations by other authorities. Hofmeier, Runge, Veit, and others have found the placenta in post-mortem examinations on subjects who died with placenta previa invariably attached to the lower uterine segment, wholly or in part, the evidences of separation visible upon the uterine walls, and in some instances reaching down as far as the os internum.

Bayer's objection that insertion upon the lower segment would be followed by fatal hemorrhage on account of the absence of contractility of this part is met by Hofmeier by the anatomical demonstration of the vascular supply of the uterus. According to Hof-

meier the uterine artery gives off branches to the vagina and cervix, then passes upward without distributing any further branches until it reaches the contraction ring, where it enters the uterus. When contraction or retraction of the upper segment occurs, the bleeding is cut off from the portions below.

Barnes has another theory for the cause of hemorrhage in placenta previa. He discards the idea that expansion or growth of the lower segment or cervix has anything to do with hemorrhage, either in gestation or labor. His theory is just the reverse of that generally accepted. "He urged that the part endowed with the most active part is the ovum, the placenta; that the growth of the uterus is secondary upon the stimulus imparted by the growth of the ovum. He inferred that the first detachment of placenta arose from an excess of growth of the placenta over that of the lower region of the uterus to which it was attached; that the structure of this uterine region was ill-fitted to keep pace with the placenta; hence loss of relation, the placenta shoots beyond its site, and hemorrhage results."[1] I am not aware that this theory has many supporters, although the observations may be founded on fact. It is certain that the same conditions do not obtain in all cases. Many examinations would be required in the various stages of pregnancy with the parts undisturbed to settle anatomical questions satisfactorily. In almost every instance in which autopsies have been made where death resulted from placenta previa even with the fetus still undelivered, attempts at delivery had been practised, and thus the relationship as well as the integrity of the parts disturbed. It would be necessary to investigate the uterus with the placenta and fetus *in situ;* no interference for the purpose of separating the placenta or extracting the fetus having been attempted. Ahlfeld[2] secured a specimen in which no other attempt to arrest the hemorrhage had been made except the introduction of a vaginal tampon by the midwife in attendance. The uterus, with its contents, was removed entire, the liquor amnii drawn off through a small opening in the fundus and replaced by a preserving fluid, after which the unopened uterus was immersed for later study. I have not heard, however, of the result of his investigations.

[1] System of Obstetric Medicine and Surgery, page 573.

[2] Verhandlungen d. Deutschen Gesellschaft für Gynäkologie, zweiter Kongress, Halle, 1888.

For the present, the theory that the development of the lower uterine segment explains the clinical and anatomical features of placenta previa and that placental separation is the result of expansion of this portion of the uterus, seems to be the most rational and satisfactory.

DISCUSSION.

Dr. James F. W. Ross, of Toronto.—Mr. President: I did not intend to discuss this subject, but I wish to congratulate Dr. Wenning on having written such a valuable paper on the subject of placenta previa. He has gone over the ground so thoroughly that there is very little left to be said. The different theories that have been advanced regarding the cause of the abnormal implantation of the placenta have been thoroughly argued by him in his paper, and it is difficult to say which one of the theories it is best to pin our faith to. My own ideas regarding the subject are, that there must be some very close connection between the frequency of the production of left occipito-anterior presentation at a later period of intra-uterine life and the normal implantation of the placenta. The author holds that the upper implantation is as abnormal as the lower implantation. I think the most frequent implantation of the placenta is that described by him as on the side of the uterus in the middle zone, running up into the upper zone. When we consider the peculiar position of the fetus lying in the membranes, it is hard to understand why this implantation on the upper segment should be an abnormal one. The back of the fetus naturally rests downward by the force of gravitation, and any budding of the placenta that takes place subsequently must do so upward. I do not know that I should consider implantation on the upper portion of the uterus as abnormal as that on the lower zone, because I have not given the subject sufficient thought.

The discussion as to the treatment of placenta previa is, I suppose, out of order. The author did not touch on the question of treatment, although a division of the two forms is given by one authority mentioned by him in which the clinical features are totally different, and he gives an admirable explanation of the reason why the clinical features are so different, and this is a point of importance in connection with the treatment. We all know the cases that are most fatal are perhaps those in which the cervix is indurated and undilatable, and in which the hemorrhage takes place before the period of labor. In the

other class the cervix is generally found more dilatable, and as a consequence we have easier access to the interior of the uterus. I have seen cases in which the cervix was firm and rigid, and in which the hemorrhage took place only at the time of labor. There were no premonitory symptoms, and it was impossible to say until labor had set in that the patient was suffering from placenta previa.

Dr. William Warren Potter, of Buffalo.—I experience, together with Dr. Ross, disappointment in this paper in that it does not enter into the question of treatment. I know that I express the views of every Fellow present when I say there can be nothing but admiration for the splendid manner in which the subject has been presented up to that point. Dr. Wenning is a clear writer, a careful student, and a forceful teacher, and he could do nothing less than present a paper which would clear up a great deal of uncertainty in the minds of many on this or any other obstetric subject on which he should choose to write. I was wondering if, before we enter further into the discussion on this subject, we could properly invite Dr. Wenning to give us a verbal synopsis of his ideas of the management of these cases, so that we can include the treatment of placenta previa in the discussion. It seems to me in sending out a volume of *Transactions* yearly, as we do, one great value of the book is to make the subjects dealt with somewhat exhaustive in the discussion, as well as in the presentation of them primarily by authors. If we can send out in the volume of *Transactions* which we are to make at this meeting an authoritative expression of this Association on the subject of placenta previa from beginning to end, it seems to me it will add much to the literature of the subject. I rise for the purpose of making this suggestion rather than to enter into a discussion of the essential features of the question myself.

Dr. Wenning.—It was my intention originally to discuss the treatment of placenta previa based upon the pathological anatomy of the subject, but I found before concluding my paper that it would have assumed such large dimensions as to exclude, perhaps, other valuable contributions. I therefore preferred to reserve the subject of treatment for some future occasion. I simply presented the pathology as introductory to treatment.

You will remember that I spoke of the views of Schroeder in explanation of the retraction of the uterus in normal labor. In abnormal implantation of the placenta, if the placenta can follow the uterus in its upward movement, hemorrhage—for a while at least—is prevented, but if the uterus be *drawn away* from the placenta, separation results and hemorrhage takes place. You will recall to mind also

the statement that in placenta previa, if the liquor amnii remains intact whilst the uterus retracts in labor, the placenta cannot follow the uterus in its retraction; it becomes separated from its uterine attachment, and hence hemorrhage results; but if the bag of membranes be ruptured the placenta will for a time follow the lower segment of the uterus in this movement, by which separation from the site of implantation is temporarily prevented. This is an important point to consider in connection with the early rupture of the membranes, advocated by Barnes and others, as the first step in the treatment of placenta previa, but by most considered only in the light of provoking uterine *contractions*, and thus arresting hemorrhage.

During labor, contraction of the upper segment of the uterus causes intra-uterine pressure in the direction of least resistance—the cervical portion. This intra-uterine pressure causes the presenting part of the child—preferably the head—to become forced against the placenta, acting as an intra-uterine tampon. But with the dilatation of the cervix this portion of the uterus (membranes intact) is drawn away from the placenta, and hemorrhage results; consequently contraction and retraction act antagonistically to each other, unless the placenta can follow the lower segment of the uterus in its upward course. The principles of treatment then are: First of all, to bring on labor, and thus promote contraction of the upper segment of the uterus; and, secondly, during the process of retraction of the lower segment to permit the placenta to retract with the lower segment, by which hemorrhage is temporarily prevented. This is done by rupturing the membranes at the proper time. This does not exclude the use of the tampon, for if properly introduced early in the onset of hemorrhage, hence particularly when the cervix is closed, it is a valuable adjunct to treatment. Its pressure against the cervical portion temporarily arrests the hemorrhage, whilst at the same time it provokes labor pains—namely, contraction of the uterus and dilatation of the os. This brings us to the second step, viz.: As soon as the cervix is sufficiently dilated to admit the finger, rupture the membranes. This will enable the head to descend and the lower uterine segment to which the placenta is attached to ascend (retract). Schroeder maintains that the body of the womb is draw over the body of the child and the placenta pressed against the latter by the retraction of the uterus, and thus hemorrhage is arrested.

Rupture of the membranes may be delayed in those cases in which preference is given to the Braxton Hicks method of bi-polar version, but I am not in favor of losing valuable time in futile attempts with

this method, but prefer the direct method of version as soon as the hand can be introduced.

The much-condemned *accouchement forcé*, as advocated by Spiegelberg (but not the rough-and-tumble manner in which it is often understood), may be instituted. I mean the gradual but persistent pressure of the conical hand through the cervix, which in this instance is usually softer and more dilatable than in the normal condition. With gentle insinuation of the hand in the cervix you can reach one foot—it makes little difference which—and bring it down until the thigh effectually tampons the cervix. Whilst forcible extraction is certainly to be deprecated, it does not exclude gentle tractions upon the limb until dilatation is complete, and then complete extraction rendered possible.

Dr. Ross.—Do you give ergot?

Dr. Wenning.—Very rarely, if ever.

Dr. George F. Hulbert, of St. Louis.—As I understand it, the purpose of the paper was to deal especially with the pathologico-anatomical conditions. Am I right?

Dr. Wenning.—Yes, sir.

Dr. Hulbert (resuming).—That necessarily goes into the cause of the abnormal implantation of the placenta. The only point I want to make in that respect is a possible explanation of why we have these various phases of placental implantation; that the real element in it is simply the question of nutrition. Our usual understanding is that as the ovum is projected from the opening of the Fallopian tube into the uterine cavity, it is immediately cared for by the hyperplastic mucous membrane. That on account of the particular character of mucous membrane which has been denuded partially of its superficial layer of epithelium, the nutrition is insured simply by reason of the easy affinity between the peculiar tissue upon the outside of the ovum, the villi, and the tissue presented by the mucous membrane in the cavity of the uterus. We usually consider the post-menstrual period as peculiarly the most advantageous time for the retention of the ovum.

This, of course, brings up the site at which the ovum is fecundated, and I am rather inclined to the opinion that fecundation as a rule occurs in the Fallopian tube, for the simple reason that if fecundation did not occur until after the ovum had been projected into the uterine cavity, there would not be the peculiar conditions present upon the outside of the ovum which would be advantageous, or offer the favorable circumstances by which it could take advantage of the peculiar conditions presented by the mucous membrane of the uterus. In short,

there would be the presence of none of the villi of the chorion if fecundation did not occur. It seems to me that it is peculiarly unnatural for us to concede that the unimpregnated ovum passes into the uterine cavity without any of those peculiar advantages that come from fecundation, and, as we must conclude, purely as a matter of accident, is retained in the uterine cavity until fecundation occurs; then it has the opportunity of receiving responses in nutrition from the mucous membrane of the uterus, because in the absence of fecundation the ovum may be considered in the light of a foreign body in the uterine cavity. Consequently, assuming that fecundation occurs before the ovum reaches the uterine cavity, and that the villi have begun to develop and are more or less completed, we have a prompt implantation of the ovum in the most readily accessible point, or at that point in which it first presents to the uterine mucosa. There is that peculiar response between the two, the ovum and the mucosa. Nutrition is immediately accomplished, the life of the ovum is maintained, development progresses, and where those conditions do not exist we would expect unnatural implantation of the ovum.

The author assumes that fundal implantation is as unnatural as the cervical. I hardly feel like conceding that, for the simple reason, I can readily understand that if we bear in mind the peculiar formation of the uterine cavity, particularly in primiparæ, that we have in the fundus of the uterus a convex rather than a concave surface. The ovum in passing from the Fallopian tube may readily become attached to the mucosa at the fundus; it is a question of where the best nutrition is provided that determines the future implantation of the placenta. We can readily understand that in the lateral sides of the central zone of the uterus we have provision there of an increased grade of nutrition; the blood supply is better there, and between the two we can account for the almost universal attachment of the ovum to the central zone rather than to the fundus, there being probably some difference in the nutritive supply between the two. If the ovum is not impregnated in the Fallopian tube and is projected into the uterine cavity, and impregnation occurs subsequently, it is purely an accident that it is retained at all or that its vitality is maintained.

In regard to the peculiar anatomical conditions and the cases in which we *do* and *do not* have hemorrhage at certain stages of placenta previa, I concur in what Dr. Wenning has said in his paper. The only point I desire to call attention to is *how* to proceed in delivery. I use the tampon. I have great faith in it, and do not care to discard its use. My experience is that it is a perfectly safe procedure not only

as far as the mother is concerned, but for the doctor as well. The point is simply not to place a lot of material in the vagina with the idea of plugging it there, but to place a tampon there for the purpose of making uniform compression intra-cervically as well as extra-cervically. Where it is possible to get anything into the cervix in the way of a tampon, it should so be placed that it will fill it as full as possible; surround the cervix in all directions by small pieces rather than by large masses, and so gradually fill the vaginal canal. The use of the tampon is rational, if the explanation of the cause of the hemorrhage is the correct one, as by its support and equalization of the circulation as far as the uterine tissue is concerned, a better activity of the tissues is promoted. The result will insure the presence of good functional activity, leading not only to dilatation, but retraction of the lower segment of the uterus.

In regard to rupturing the membranes, I will ask Dr. Wenning what is the procedure where the implantation was central? If we concede that contraction is an element in preventing uterine hemorrhage by maintaining the position of the placenta where the implantation is partial, as soon as that portion which covers over the central canal is released and the other side is free, then dilatation can go on and hemorrhage be controlled. Where the implantation is absolutely central the time and way in which the membranes are ruptured are matters of great importance. I believe the best procedure is to dissect off one side, rupture the membranes, enter the cavity, and deliver. As soon as rupture occurs the head comes down, or an extremity can be released and brought down, and I have never had any difficulty in controlling hemorrhage in cases of placenta previa after I succeed in rupturing the membranes and get the head well settled so as to make firm pressure from behind; or in bringing down a leg, making necessary pressure with the buttocks of the child.

Dr. John M. Duff, of Pittsburg.—I do not rise to discuss the paper, but inasmuch as Dr. Wenning has been called upon to refer to the treatment of placenta previa, I will say that in addition to the usual treatment recommended, Cesarean section has been suggested, and is in vogue by some practitioners.

Dr. Wenning.—I regret exceedingly I could not bring up the subject of treatment of placenta previa in the body of the paper, which I know would have provoked more discussion than the pathology of it. The reason why I took up the subject of its pathology was because it is so meagerly discussed in our text-books.

Dr. Hulbert has asked what method I pursue where the implanta-

tion is central. My method is the same as that to which he refers in his remarks.

From the explanation I have given, dilatation goes on, and it is very probable that in 100 cases the placenta previa will not remain entirely central. It will be eccentric. I dissect off a portion of the placenta, so as to reach the membranes, and then enter the cavity. In the delivery of those cases which have been described, where the placenta covers the uterus entirely up to the fundus, I pierce the placental tissue and go right through. It is wasting time to dissect off one entire side of the uterus. In cases where dilatation becomes complete and retraction is natural, I dissect off the placenta until I reach the membranes, pierce them, and then deliver the child.

I am in favor of the tampon until I can deliver. It gives me time. The tissues become softened, more relaxed, dilatation takes place, and so does partial retraction. But the way of applying the tampon is a very important matter. I have been called in consultation in several instances where the tampon had been used improperly. It will not do to roll up a piece of cotton and push it up against the cervix. It is absolutely essential to lay bare the field, put the patient in Sims's position, with the upper portion of the body depressed, and open up the posterior wall of the vagina with a Sims or other retractor. Lately I have been using antiseptic gauze for tampons, packing long strips as tight as I could, filling up the vagina, and finally placing a pad in front of the vulva. That is the only proper way of applying the tampon in placenta previa.

I have had a peculiar experience with Barnes's fiddle-shaped bags. Some years ago I was called to a case of placenta previa which was treated by means of tampons. A ball of cotton was simply rolled up and passed up the vagina. The cervix was dilatable, but not entirely dilated. I proposed to deliver at once. The physician in charge, who was an older practitioner than I was then, preferred tamponing. I said: "Very well, we will tampon the cervix. We cannot depend upon any other kind than a cervical tampon." I passed in a Barnes's fiddle-shaped bag, the largest size, until the os became constricted around the central portion, and examined the patient carefully to find out if the cervix everywhere perfectly embraced the tampon. I then left for another case to which I had been called, leaving the case in his charge. In my absence he also left the patient, and in calling to see the case again, I found the tampon thrust into the vagina, and the patient bleeding terribly. I delivered as rapidly as possible, although the patient died six weeks later of septicemia, consequent upon a phlegmasia alba dolens.

One point which is new, and which I expected would provoke considerable adverse discussion, is the question of fundal implantation of the placenta. I admit that the uterus, being better nourished in its upper portion, offers a more favorable soil for its implantation at the fundus, but when the ovum, probably already impregnated in the tube, reaches the cavity of the womb, it will by gravity tend to become fixed to the side of the uterus. It will fall, as it were, into one of the crypts or folds of the decidua. For we do not know when the impregnated ovum reaches the womb, nor in what position of the mother, respectively the womb—whether in the upright or horizontal position. The ovum is consequently more apt to become imbedded on a line below, rather than above the uterine end of the tubes. But where the ovum becomes fixed to the womb there will also be the site of placental implantation. Hence this will most frequently occur in the middle zone, but may also by extension partially invade the upper or even lower zone. I believe in most cases implantation is to the side, but the best way of determining that is to examine for the site of the rent in those cases in which during labor spontaneous rupture of the membranes has taken place. You will find the placenta is more to the one or other side. It is rare that you find the placenta attached exactly opposite to the rent. My observations lead me to conclude that implantation takes place much more frequently to the sides of the uterus, or antero-posteriorly, than it does in any other place.

Dr. John C. Sexton, of Rushville, Ind.—In those cases where the placenta is partially implanted—placenta previa lateralis, according to the old nomenclature—the author says the better way is to carry the finger into the os, go out to one side, dissect up with the finger that implanted portion of the placenta, and then evacuate the water. I wish to inquire if there is any way by which we can tell on which side of the cervix is the smallest portion of the placenta. It makes a vast difference to the patient if you have only a small portion of the placenta attached to the side of the cervix. On the other hand, suppose you make a dissection with your finger where there is three-quarters of it, it is altogether a serious matter. I would like to ask if there is any difference to the "feel" of the cervix, either in, through the os, or external to it by which one can be guided as to which side or other of the cervix the smaller implantation of the placenta may be? I wish to get a little information on this point.

Dr. Wenning.—I am glad Dr. Sexton has brought up that phase of the subject. It is practically impossible to tell with positiveness which side is implanted. We only have our clinical experience to guide us.

In a large proportion of the cases the placenta is to the right, and the smaller implantation to the left, consequently, as a rule, it is better to proceed toward the left in dissecting than to the right. There is, however, a possibility of the larger portion being on the other side. There are cases in which before full dilatation of the os there is a greater development of the lower uterine segment. There is a segment on the side where the greatest amount of implantation is.

Dr. Potter.—Will Dr. Wenning tell us about the propriety of the induction of labor prior to term? With reference to the teachings on the subject, it has been maintained as orthodox in cases of placenta previa to watch, and when symptoms of hemorrhage present, to induce labor. The author has not covered that question in his remarks, which is along the line of preventive treatment.

Dr. Wenning.—I should be guided by the form of placental implantation and the amount of hemorrhage. If I had a case of placenta previa totalis to deal with, I should induce labor as soon as discovered, if possible. If it was a case of lateral implantation, I should wait. In the case of serious hemorrhage, and where there is danger from loss of life, the sooner delivery is effected the better.

Dr. Hulbert.—As determining which side the placenta is attached, clinically it is usually on the right side. I would like to ask Dr. Wenning whether he has ever tried to determine the thickness of the different segments of the cervical canal by simply bringing the head down, and in that way by feeling from below, thus getting a fair idea of the difference in thickness, using the head as a fixed point.

Dr. Wenning.—I have never tried that. I think it is a good suggestion.

Dr. Hulbert.—I have been materially aided in that way.

Dr. Ross.—I would like to ask Dr. Wenning whether from his own experience, or a perusal of the literature of the subject, he has found any mention of placenta previa occurring in women who are known to suffer from retroflexion of the uterus. We all know a great many women naturally have retroflexion, they become pregnant, bear children, and the retroflexion returns subsequent to labor.

Dr. Wenning.—One author mentions retroflexion of the uterus as a predisposing cause of placenta previa. Our obstetrical literature is so immense that I cannot recall the names and ideas of the various authors. In my own experience, I have not had cases of retroflexion of the uterus in conjunction with placenta previa.

THE CARE OF PREGNANT WOMEN.

By JOHN MILTON DUFF, M.D.,
PITTSBURG.

In calling attention at this time to the care of pregnant women, I frankly admit I have nothing specially new to offer. My object is only to emphasize what is already well known, and to appeal to you and through you to the profession and to the public on behalf of a more extended practical application of the knowledge already at our disposal in the care of pregnant women.

I am stimulated to undertake this appeal because of the well-known fact that in this country, while in many instances there is an isolated attempt by both physician and patient to adopt a scientific and rational cure, there is no general observation of a well-defined and practical rule. The general idea with the public, and in fact, the practice of many physicians, would indicate that they too held the same view—that is, that the work of the obstetrician began with the onset of labor and ended with the completion of delivery. Obstetrical work in the country is, to a great extent, haphazard. Such a thing as engaging a physician prior to the time he is hastily summoned to attend the woman in labor is scarcely ever thought of in some communities, and the idea of having him examine her during the gestative period would almost be considered sacrilegious; and this, too, in intelligent communities and among educated people. It is not a year since the wife of a minister charged me with impudence and want of proper decency and refused to have me attend her daughter in confinement, because I had the temerity to suggest that I would visit and examine the patient prior to the time of her expected confinement. There exists only a crude notion among the majority of the people of the hygienic necessities of the parturient or gestative woman. I am convinced that it is the duty of the medical profession, as the conservators of the physical welfare of the human race, to speak out and act upon this sub-

ject, and endeavor to bring about a reformation of existing conditions. In advocating reforms in matters of this kind, one must necessarily be to some extent fanciful in the claims made. What I advocate, I do from a thorough conviction of its necessity, in the interest of woman and her offspring.

The past decade has witnessed a great revolution in obstetric practice, and it is with great pride we point to the achievements of the present day, even with all its defects. Our maternity hospitals are vying with each other in their efforts to reduce the death-rate from infection, and some of them have practically reached the goal of their ambition. The general practitioner of medicine is becoming enthused by the benign results of aseptic practice, and scarce a medical journal appears which has not some portrayal of the magnificent results in his last one or two hundred cases of labor. Enthusiastic workers have revived pubeotomy; and Cesarean section has received several beneficial modifications. This is all very gratifying, and I trust the good work will go on with renewed energy.

As obstetricians, however, we must be careful that in our zeal in this direction we do not expend all of our energies to the neglect of other interests and conditions such as those I have just spoken of, and which are equally worthy of attention. The obstetrician should forever bear in mind himself, and endeavor to impress upon the public mind, that his duties do not begin with the onset of labor, nor end with the accomplishment of delivery. He has a broader and more complicated field of work. The science of obstetrics, as I understand it, embraces all of the knowledge we possess relative to the reproduction of our species, especially as far as the part therein played by the female is concerned. The art of obstetrics is the application of this knowledge in practice. We thus see that the demands of our art are much more comprehensive than the laity perhaps perceive, and even more than some of the belated members of our profession are willing to admit.

The obstetrician takes cognizance of the male germ as it wends its way to fecundate the female germ; he notes the first cell genesis and marks its every change in its wonderful developmental existence within the uterus, until it is expelled from the maternal organism to take on an independent existence. During this time, every pathological condition must be cared for and every accident

attended to. At term the mechanism of its expulsion must be understood, and the long line of pathological and physiological phenomena call for his closest study. I may indicate the principal scope of his study in the one word—woman. He must study her anatomically, physiologically, and pathologically; study her intellectual and moral nature. The modifications of her human nature made by her sexual nature must be learned by him. Thus he will find that in the great crisis of her life, during pregnancy and parturition, she will demand a treatment especially adapted to her individual constitution; he will find that there is much to know regarding her, in order that she may be treated successfully, which neither the dissecting-table, the pathological and physiological laboratory, nor the revelations of clinics will disclose to him. Much that will be of benefit can be learned only from a study of her in her social relations. It is around the family hearthstone he may see her excellences, her failures, her sufferings; familiarize himself with the hidden springs of her passions, and become acquainted with her motives, tastes, and ambitions. It is only by acquiring knowledge of woman by all these varying avenues, and reducing it to a system, that we may hope to illuminate our professional pathway and dispel the clouds of doubt and uncertainty which will ofttimes surround us when we attempt the care of pregnant women.

To go to the fountain-head of our subject, we may say that to assist in the production of a physiological gestation and parturition, the physical training of the female, from her earliest youth, should be conducted with the consideration that she is to become a generative being. Who that has read the very excellent article on posture in obstetrics and gynecology, presented by Dr. W. W. Potter, at our last meeting, or who that has carefully noted the asymmetry of the female pelvis, very often due to her bad hygienic environment, to the forced assumption of an inelegant and unnatural position during school hours, or in the performance of manual duties beyond her years, and has seen difficult labors and complications which frequently arise therefrom, can deny that this is a subject worthy the most careful consideration of those who care for the early training of the future mothers of our country? A hint in this direction is, I trust, sufficient to awaken an interesting line of thought.

Although it would be right to subject all women contemplating

marriage to a physical examination, and to forbid by law the consummation of the marriage vows by those whose deformities of the pelvis would preclude the possibility of the birth of a living child through the natural passages, as society is now constituted such an idea is merely chimerical. Every pregnant woman needs moral and hygienic if not medical treatment, and she is therefore entitled to the care and advice of a competent, careful, and conscientious physician, from the day she knows herself to be pregnant until she arises from her couch after the lying-in. She is entitled to this, not that she may be dosed with useless nostrums, but that she may learn how to care for herself in the character and quantity of food, clothing, exercise, and in social and family duties, so as to avert disease or accident. She is entitled to it, so that her immediate family may be instructed how to deport themselves toward her in this the trying ordeal of her life; entitled to it that she may learn to care for herself in the interest of the child, that it may come forth a living human being, without an impress upon its physical or nervous system, which might prove not alone unsightly, but as well, disqualify it for the full enjoyment and the performance of the high duties of life.

If the foregoing is impracticable, under all circumstances she should have a careful examination at the hands of her physician some time before her anticipated confinement. Neither poverty, modesty, nor wilfulness should interfere with this requirement. Every obstetrician should demand this privilege as a matter of duty. A failure to submit to it is unfair to physician and compromising to patient, and has in the past been the direct cause of countless thousands going down to premature graves. The physician on every occasion before attending a woman in labor should be familiar with the personal and family history (medically speaking) of his patient, that he may note personal or family idiosyncrasies, discover and treat diseased conditions if present, determine the presentation, if not the position, of the child *in utero*; ascertain the dimensions of the pelvis or the presence of deformities, and the general physical condition; to judge of her ability to withstand the throes of labor; in short, that he may be able to anticipate any accident or abnormal condition which might arise during her labor, and if possible to ward it off, or if not, to be able to treat it promptly, scientifically, and successfully.

I am fully aware that there are many physicians who will say

that all this is unnecessary, and that it is impracticable. I have heard men in the profession whose judgment I respect, whose friendship I cherish, and whose erudition I honor, say that this is all fanciful and unnecessary; that not one woman in every ten needs a physician until she is in labor, and that those who do generally call for him. They say by my course the other nine-tenths would be subjected to unnecessary and perhaps harmful meddling.

I do not want to be fanatical nor arbitrary, neither would I intentionally impose upon the physician unnecessary duties nor subject women to needless and perhaps harmful meddling. I can say, however, that some of the most bitter reflections I have in my professional life are on account of disastrous results caused by a failure on my part to carry out the principles I advocate here to-day.

I am fully aware that comparatively few pregnant women need medication, nor perhaps do the majority of them need a great amount of professional advice; that not less than 90 per cent. would pass a safe confinement without ever having looked into the eyes of a physician prior to his entering her room to confine her; but where, I ask, are we to draw the safety line? How many women are competent to determine when they pass from a physiological to a pathological condition? Where is the woman who can diagnosticate an oblique presentation or give the conjugate diameter of her pelvis?

With regard to the diseases of pregnancy, my observation leads me to belief they do not, as a rule, receive that consideration their importance demands, and that there is a false and widespread notion with regard to their susceptibility to treatment.

"Too often they are considered, especially by the laity, as unavoidable, incurable, and to be philosophically endured. 'Therefore the weary victim suffers silently in seclusion, cheered only by the dismal hope that time and *labor* will at last bring her the longed-for relief.' No *therapy* palliates her aches and pains, nor calms her frenzied nerves. She receives the cheerless comfort from a knowing mother, sister, neighbor, or friend, and sometimes, indeed, from her physician, that her sufferings are the necessary concomitants of her condition, and that it is her moral duty to cheer up and bear her burden heroically.

"Ofttimes any intimation on her part that perhaps a physician

should be consulted, is met with the rejoinder: 'The doctor would only laugh at you.'"[1]

In this day of preventive medicine I know of no field which offers more golden opportunities than the one under discussion. To accomplish the end desirable we must change customs, put down superstition, enlighten the ignorant, and overcome false modesty. I do not pretend to say that all women can be guided through a safe and uneventful pregnancy. I am sure, however, that the science of medicine has more power for good in this direction than has been taken advantage of, and is perhaps capable of very much more, if properly cultivated, than our most sanguine expectations would lead us to hope for.

I perfectly agree with Professor Lusk when he says: "The attempt to relieve the disorders of pregnancy *seriatim*, it should be stated in a general way, is a vain undertaking, and is a good method to beget hysteria by fixing the female's attention upon minor ailments." I am not forgetful of the words of that Nestor of American obstetrics, Professor Charles Meigs: "It is often dangerous to ask a physician the question, 'What shall we do?' because habit, custom, routinism, almost always compel him to say, Take—take."

I speak, however, of the employment of a scientific physician, a medical *gentleman*, who will perform his duties conscientiously.

I will not attempt to uselessly occupy time in a review of the hygiene of pregnancy nor of the treatment of the diseases of pregnancy. These are given in all recent works on obstetrics more elegantly and minutely than I could hope to do. I desire, however, before closing to call attention to strychnine as an adjuvant in the treatment of disorders of pregnancy and as an aid in parturition. This drug is useful as a nerve and general tonic in the various neuroses; as a cardiac tonic where there is weak and irregular action of the heart, as a remedy in gastric disturbances, and in constipation. It appears to me to have a very happy effect as a remedy preparatory to labor where there is general debility and want of muscular tone. In women who, on account of irregular or feeble uterine contractions, have previously had tardy labors; in those who have a history of post-partum hemorrhage and of want of contraction and retraction of the uterus subsequent to delivery, and

[1] "The Diseases Incident to Pregnancy," by John Milton Duff, M.D., Medical Mirror, March, 1893.

in those subject to severe after-pains, I have had very happy results from the systematic administration of strychnine in doses of from $\frac{1}{60}$ to $\frac{1}{30}$ of a grain, three times a day, for from a month to six weeks prior to the expected onset of labor. If the administration of anesthetics, especially to the production of surgical anesthesia, should become necessary during labor the patient will be in a safer condition by having had this preparatory treatment. While my use of this remedy for these purposes has so far been satisfactory in the majority of the cases in which I have used it, my work with it has been experimental and somewhat limited. I present it to you with the hope that some of you may have administered it for the same purposes, and may therefore enlighten us upon your results.

If I have succeeded in presenting this subject in a way which will tend to draw out discussion, and thus aid in showing the necessity for a more systematic and scientific care for pregnant women, I have accomplished the object for which I presented this paper.

DISCUSSION.

Dr. George F. Hulbert, of St. Louis.—Mr. President: I desire to commend the position taken by Dr. Duff in his paper, which I believe is the correct one. I decline to take obstetrical cases that will not permit me to do what I think is essential for their care. Of course, in saying that, I do not refer to cases to which I am called in an emergency; but where I have patients and am considered their physician, who become pregnant, they understand perfectly well that unless I am permitted to make a preliminary examination, and thus ascertain as to their condition, I will decline to take charge of their cases when the critical moment comes. It is a matter of not only justice to the physician, but to the patient. There is an element of moral suasion in it that we can be criticised for possibly by the sore-heads and laggards, and the ungenerous members of our profession can advance the financial criticism that we do it for a little more money than we are entitled to in taking care of them at parturition. Certain it is that we can by ordinary judgment in a large majority of the accidents and difficulties that happen during parturition and subsequent thereto prevent and put a stop to the record that we have in obstetrics in this country. I believe that the paper is a timely one. It is in the

right direction. As far as I am personally concerned, I heartily commend it, and I believe we should act upon the suggestions contained therein.

Dr. X. O. Werder, of Pittsburg.—I indorse the views expressed by Dr. Duff in his paper. He has certainly given us ideal obstetrics, and while it may be difficult to carry out in private practice, I certainly think by training our patients a great deal can be done toward advancing and perfecting obstetric practice. As far as I know, the suggestions of Dr. Duff are only carried out in maternity hospitals, but even at these places not to the extent desirable. I think, moreover, by explaining to patients the importance of having them under observation during the whole course of pregnancy, many of them will see the necessity of it also in private practice.

Dr. M. Rosenwasser, of Cleveland, O.—I concur in the position taken by the essayist. I think his suggestions are, in the main, practicable. In an obstetrical practice of twenty years or more, I made it a rule to insist upon an examination of my primiparæ at least, and I never found one who objected. If I requested them to come during the seventh, eighth, or ninth month for examination, they would be on hand. It is not necessary that we call at their houses; they can come to our offices. It is especially important with reference to measurements of the pelvis. I believe the public is ready to accept what we teach in this regard. I do not think any cultured minister will object to such examination when the public has been educated to the idea that these preliminary examinations are a necessary safeguard in the preparation of pregnant women for the parturient act.

DILATATION OF THE CERVIX FOR DYSMENORRHEA.

By EDMUND M. POND, M.D.,
RUTLAND.

In this brief article I shall simply deal with dysmenorrhea due to stenosis. We may divide these cases into three classes :

1. Those in which the cervix is small and elastic or normal.

2. Those in which the cervix is long, conical, non-elastic, and cartilaginous.

3. Those associated with flexures.

When the cervix is small and elastic the use of a light Palmer dilator one or more times will, as a rule, afford complete relief. This can be used without anesthesia at the office, and if asepsis is observed it will never be followed by ill results. It can be carried to full expansion of the blades and applications made to the canal, or a strip of iodoform gauze left in position. I have used this light dilator many times in my office, and have never had other than good results from its use.

I will cite a few cases in order to better illustrate my views :

Case I.—Mrs. C., aged twenty-six years ; married six months ; dysmenorrhea from first menstruation. Slight leucorrhea and considerable pain at times over the ovaries—is regular. Uterus normal, cervix small and stenosed. The light Palmer dilator used without anesthesia ; the cervix being elastic, readily yielded. Complete cure followed one treatment. The dysmenorrhea, leucorrhea, and pain in the side have entirely disappeared. It is now nearly a year and there has been no return of the symptoms. While this case yielded readily to the first treatment, perhaps the majority require repetition.

Where the cervix is apparently normal in every condition save the stenosis it will, as a rule, yield to repeated dilatations with a

light instrument, swabbing with tannate of glycerin or carbolic acid, and packing with iodoform gauze. By repeating this every other day, and each time passing a larger piece of gauze, the cervix will soon become thoroughly dilated. If a light dilator fails, a heavier one should always be tried before resorting to incision. If the cervical mucous membrane is unhealthy, with profuse secretion and distended glands, the sharp curette and swabbing with carbolic acid will be of great service.

Where the cervix is long, conical, and cartilaginous the treatment is far different. Here we may use a light instrument and repeat often, still the cervix contracts almost as soon as it is removed. The most satisfactory results follow the free division of the stricture, on two or more sides, from the internal to the external os, with thorough dilatation, and the introduction of a stem to be worn ten to fourteen days, or longer if necessary. After this the cervix must be dilated once or twice a month to avoid subsequent contraction. If the cervix is very long, an inch or more may be amputated, thus diminishing the length of the stenosed canal. The cicatrization also produces slight gaping of the external os. This is specially applicable where the cervix is very dense. If the cervix is yielding, the crucial incision and trimming the tips will produce the same result by allowing the cervix to shorten.

Rapid dilatation with a powerful instrument, with or without crucial incision, has not been as satisfactory in my hands in these cases as the bloody method. The cervix is more liable to contract and greater prostration with symptoms of uterine congestion follow its use, often lasting months.

Case II.—Miss S., aged thirty-three years; dysmenorrhea from first menstruation, beginning a day before and lasting during the first two days of menstruation. Pain over the ovaries and uterus between menstrual periods, backache and slight leucorrhea. Drugs and repeated dilatation had been tried for years without relief; to what extent they were carried cannot be said. Uterus normal in position; cervix very long, conical, cartilaginous, and extremely stenosed. With great difficulty a light instrument was introduced, first passing a sharp-pointed knife to open the way. Rapid dilatation by this method was repeated twice a week for some time without relief. Under ether the cervical canal was freely divided on four sides from the internal to the external os, one inch of the cer-

vix amputated, the canal thoroughly dilated and a hard rubber stem introduced. On the third day she had a chill; pulse 130, temperature 105°. The tampon and stem were removed, a hot douche given, and ten grains of calomel administered. Twenty-four hours later the temperature and pulse were normal, when the stem was reinserted and left for fourteen days without discomfort or bad symptoms.

The after-treatment consisted of dilatation with a light instrument at increasing intervals for several months. A complete cure has followed, and an applicator with cotton can be easily passed. A year and a half later the patient was married and soon became pregnant.

Case III.—Miss M. S., aged twenty-eight years; dysmenorrhea, leucorrhea, backache, pain in both sides, especially the left; menorrhagia; is regular. Examination revealed a retroflexed adherent uterus, a long, conical, cartilaginous cervix, with pin-hole external os. Uterus enlarged to four and one-half inches; prolapsed and adherent left ovary. The vagina was divided laterly in its upper and posterior part by a partition, making almost a double vagina. This band extended around the cervix at a level with the internal os and held the uterus in a posterior position. After its removal repeated attempts were made at reduction of the uterus by manipulation and tampons with dilatations. The reduction was at last accomplished, but the stenosis remained.

Under ether the cervical canal was freely incised throughout its whole length, thoroughly dilated, and one inch of the cervix amputated, thus leaving it about normal in length. A stem was then introduced and left for fourteen days, menstruation occurring painlessly in the meantime. No fever.

The uterus was then freely movable. A lever pessary could not be used on account of the diseased left ovary, but a Thomas-Cutter pessary with sponge was worn with comfort. Eighteen months later the uterus was normal in position and size, the cervical canal open, and no flooding or dysmenorrhea.

In cases of anteflexion it sometimes seems impossible to pass even a light dilator, the point hitting against the angle of flexure. If the Elliot repositor is now used and the organ carried into a condition of retroflexion and held there for a few minutes it will be found after its removal that the uterus is nearly straight, the dilator now

passing easily by the angle of flexure. This procedure certainly produces a straighter condition of the uterus, if repeated often, and I have never seen ill results from its use. If the cervix is dense a heavier instrument may be used, and if this fail, incision and a stem resorted to. There are also symptoms of ovarian congestion in these cases that are relieved when free drainage is attained.

I have noted in several cases dyspepsia where a slight stenosis and anteflexion existed, which was quickly relieved by their correction, and yet had resisted thorough dyspetic medication.

Case IV.—Miss T., aged twenty-one years; always regular; dysmenorrhea since first menstruation at twelve years, beginning a day before and lasting during the first day of menstrual flow. Has prostration and backache a week before menstruation. Has been getting gradually worse for the last two years, during which time she suffered from dyspepsia, for which she has taken medicine without relief. Examination reveals an anteflexed uterus. Cervix normal in size, but dense and contracted throughout its entire length.

Repeated dilatations with a light instrument gave no relief. Under chloroform, the uterus was straightened with an Elliot adjustor and the cervix thoroughly dilated, first with a light Palmer, then with a heavy Goodell dilator, and iodoform gauze packed into the uterus. At the next menstrual period she still had some pain, so the operation was repeated. Considerable prostration and weight in the pelvis for two months followed. She now menstruates without pain, and the dyspepsia disappeared after the first treatment.

Case V.—Miss P., aged twenty-three years; has for five years had increasing dyspepsia with great nervous prostration, weighty feeling of limbs, headache, backache, constipation. Is able to eat but little and that not without great distress; is very nervous and almost an invalid. Has had occasional dysmenorrhea, increasing during the last two years; is regular.

All the usual dyspeptic remedies and diet had been tried by many physicians, including myself.

Uterine examination reveals an anteflexed uterus, with slight stenosis, and an erosion at the external os. Uterus straightened, dilated, and applications made to the cervix; this treatment being repeated several times. A Thomas anteflexion pessary was then introduced.

From the first treatment improvement was marked and has continued. She has worn the pessary a year and a half without irritation, the treatments having been made occasionally. She is now in fair health, free from dysmenorrhea and backache, and able to eat almost everything. In this case the dyspepsia was evidently due to the anteflexion and stenosis, both of which were of moderate degree.

Case VI.—Mrs. D., aged twenty-six years; married four years; never pregnant. Menstruation at sixteen, with dysmenorrhea, which has continued. Pain begins a few hours before and lasts during the first, and sometimes the second, day after menstruation. Is often obliged to take hypodermatics of morphine. Is nervous and depressed before menstruation. Has pain over the ovaries most of the time, which is worse when walking or standing. Frequent micturition, increasing the last year. Is obliged to urinate about every fifteen minutes during the day, and is up every little while at night. Examination shows anteversion of an anteflexed uterus; long conical cervix, which is contracted throughout its whole length. Moderate dilatation gave but little relief.

Under ether the uterus was straightened with an Elliot repositor, first opening the way by a knife. A light Palmer, and then a heavy Goodell instrument were used, and the canal thoroughly dilated. A stem was introduced. On the fifth day the patient menstruated painlessly, on the twelfth the stem was removed. No fever. The frequent micturition ceased directly after the operation and has troubled her but twice since. The uterus was straightened and dilated several times during the next six weeks, using the light Palmer instrument. Considerable prostration and weight in the pelvis lasted for about two months. She is now, eight months after, perfectly well, and has not suffered from dysmenorrhea since the operation.

In cases of retroflexion the treatment is similar to that of anteflexion. Here manipulation and the Elliot repositor are of great service in replacing and straightening the uterus before dilatation.

Case VII.—Mrs. L. P., aged twenty-four years; married two years; regular. Dysmenorrhea, leucorrhea, and backache from first menstruation. Nervous symptoms and difficulty in walking. By examination, retroversion of a retroflexed uterus, with prolapse of both ovaries, and a flabby vagina were found.

The uterus was carried forward by manipulation, straightened by an Elliot repositor, and dilated with the Palmer instrument; no anesthetic. This was repeated two or three times a week, the uterus being held by tampon until the organ was replaced and the canal patulous; a Thomas-Mundé pessary was then introduced.

Treatment was continued for some months. The dysmenorrhea and other symptoms have disappeared and the uterus is in perfect position. She still wears the pessary.

Considering the good results by dilatation, is it not our duty to at once relieve stenosis of the uterus, even in young girls, for we notice years of suffering at menstruation, with gradually increasing symptoms indicating congestion of the uterus and appendages? If this condition is allowed to go on, will not the irritation from retained secretions in the uterus and tubes, with the accompanying congestion, produce permanent disease of the appendages? How quickly these symptoms are all relieved by dilatation and free drainage!

In considering this subject I am well aware I have added nothing new; but one is often at a loss to know which method to choose for a given case, and I am sure the discussion will bring out many points of interest.

DISCUSSION.

Dr. J. Henry Carstens, of Detroit.—Mr. President: I agree with the essayist in his conclusions and the necessity of treating these cases early. We have all seen cases causing dyspepsia, with marked nervous and hysterical phenomena as a result of stenosis, and that were relieved by dilatation of the cervix uteri. The inevitable result of such obstruction finally is disease of the uterine appendages. There is nothing to prevent septic material from gaining entrance into the uterine cavity, the stenosis favoring decomposition by retaining the secretions and even permitting them to pass into the peritoneum. It finally will cause dilatation of the tube, as septic material will enter and cause trouble in the tubes and ovaries.

I must disagree with the author as to the method of treatment. I think cutting is bad treatment; I can see no good in it. I see no reason why we should cut any more than we should tear. The trouble

is not in the mucous membrane, but in the submucous and muscular fibres. Some of the fibres contract and cause spasm. The mucous membrane is more or less in folds, and can be stretched without being torn. If you use a dilator to a sufficient extent you will tear the muscular fibres and fascia. You can stretch these without any, or but little, injury to the mucous membrane; so that I cannot see any need of cutting into the mucous membrane, as by so doing we are liable to cause septic absorption from a raw surface. Where dilatation is carefully practised we need produce no injury to the mucous membrane.

Packing the uterus with ANTISEPTIC GAUZE IS A KIND OF FAD. I cannot understand how good drainage comes from iodoform gauze. I have used it a few times in other kinds of cases. I do not think we can get the thorough drainage which is necessary with any such packing, not such as we can with a silver or hard-rubber stem pessary. I treat ordinary cases very little. When I have a case with a long conical cervix, I waste no time. I use an anesthetic, thoroughly dilate with a Nott or a Goodell dilator, and put in a stem pessary. With a stem pessary I obtain better drainage with material that is not liable to cause septic trouble, and the stem pessary can be worn for a long time. I have had patients wear them for two or three months until the uterus is established in its new position. Sometimes there may be muscular contraction or something else to cause displacement. The pessaries adjust themselves to their new condition, and will then remain permanent. I have seen the best results from their use, and no bad effects from having patients wear them. If I find the pessary gives the patient any trouble, I take it out. We must be careful. As I said in the first place, on account of the inability to drain we are liable to have a septic condition inside of the uterus, which may travel up the tubes, not causing trouble to a great extent; but still, during the operation of dilatation by the manipulation of the uterus—pulling it around, and down, straightening it out, opening it up, and handling it more or less roughly—we may allow the escape of septic material into the abdominal cavity and set up septic peritonitis. We cannot too thoroughly impress upon everybody the great danger attending dilatation of the cervix and the extreme care necessary in its performance.

DR. HOWARD W. LONGYEAR, of Detroit.—I agree with Dr. Pond's treatment in the main; although, regarding scarification, I concur with the remarks made by Dr. Carstens. Very little can be gained in dilatation by adding the danger of septicemia from scarification, and I do

not resort to that procedure in my practice now, although I have used it formerly.

In regard to packing with gauze, I certainly agree with Dr. Carstens. I was in the habit at one time of packing with gauze after dilatation, but I found my patients almost invariably had some rise of temperature for from twenty-four to thirty-six hours thereafter—in fact it usually continued until I took out the gauze. When I did not use the gauze, but instead a self-retaining hollow-stem pessary (so made as to allow of free drainage), I did not get a rise of temperature. I follow that method at present. A self-retaining silver stem pessary can be worn a fortnight or so after operation, during which time the patient should be kept in bed and pessary and endometrium cleansed antiseptically every third or fourth day. The patient may be allowed to go through menstruation the next time without the instrument, and then it can be inserted again and worn for several months, with occasional removals and cleansing, with beneficial results. A woman wearing a stem pessary should always be under observation.

One point I wish especially to call attention to, and that is the danger of the use of the strong Goodell dilator. I have used it a great deal, and have never had any bad results from it, although I had an accident occur a short time ago which illustrates the fact that there is danger in its use. It startled me a little at the time, as I feared infection of the peritoneum would result, but no bad results came from it. The patient was one in which I wished to dilate, curette, and then perform trachelorrhaphy. I first dilated with a mild dilator, so that I could insert the Goodell dilator. I then introduced the large instrument, dilated slowly to half an inch only, where I let it rest for some minutes, then started to squeeze the handles a little more, when suddenly they came close together. Rupture had taken place. I removed the dilator and put in my finger, but dilatation was not sufficient to admit of its passage high enough to detect the rent. I then introduced a large curette, passed it to the fundus, felt no opening, and curetted. I introduced a smaller curette afterward, when it passed up through the rent and was loose in the abdominal cavity. I withdrew it; and, to verify the diagnosis, passed a dressing forceps up eight inches or more, and then knew that I had a rupture, My forceps and curette had goneinto the abdominal cavity. I did a trachelorrhaphy, established drainage by means of a bunch of silkworm-gut, but did not swab out the uterus with anything after the operation. I simply washed out the vagina carefully with a bichloride of mercury solution, used antiseptic dressings around the vulva, and put the

patient to bed. That was nine days ago. She had very little rise of temperature following it. I did nothing except to watch carefully for any bad results that might come, and prepared to open the abdomen if necessary. There was a good deal of hemorrhage for nearly three days; but during the last day it was practically a serous discharge, though in considerable quantity. I am certain I entered the abdominal cavity in this case, but I evidently did not introduce any septic material, as the parts healed promptly. I have simply narrated this case to show there is danger in using a strong dilator, and that the utmost caution should be observed, and that it should only be used by operators who can open the abdomen if necessary. I believe the accident was caused by the presence in the cervix of non-dilatable cicatricial tissue, and it is liable to occur in cases where there have been extensive cervical lacerations.

Dr. James F. W. Ross, of Toronto.—I did not hear all of the paper. Unfortunately I was not here in time. According to my experience, there are many cases of dysmenorrhea that cannot be cured simply by dilatation. I have dilated, packed, and curetted cases, and have used pessaries, and still in a great many cases dysmenorrhea has continued. The women have subsequently married and become happy mothers of live children. I think there is a tendency on the part of some members of the profession to overtreat dysmenorrhea. It seems as natural for some women to have pain during menstruation as it is for others to have an increased flow during the menstrual period. I am opposed to the use of the stem pessary. I had hoped its days were well over; I am sorry to see they are returning. Many a pus tube has owed its origin to the use of the stem pessary. I see no objection to its use for a short period of time, but to allow it to remain in the uterus for an indefinite length of time I consider an unsafe procedure.

The frequent dilatation mentioned by the author I agree with, as I think it will answer every purpose without the danger inherent in the stem pessary. Dilatation should never be done in the office, and it should never be done without previous careful exploration of the pelvis of the woman under an anesthetic. I saw one lamentable case where a patient's cervix was dilated, the uterus curetted, and a pus tube ruptured during the process, the patient subsequently dying of peritonitis.

I believe the curse of the sound is the pus tube or the adherent tube. We all know that a small tube will sometimes have poison within its walls. We note frequently a rise of temperature in

such cases, undoubtedly due to a small leak of pus containing gonococci. The first thing to do before dilating the uterus is to thoroughly explore the appendages under an anesthetic, to find out whether there are any adhesions or not, then we can go on safely and dilate. I cannot agree with Dr. Longyear in the statement he makes, that the temperature is kept up by the introduction of iodoform gauze. I think it should be the other way. The tract is rendered aseptic by means of iodoform gauze.

For some of these cases I have used the electric current. An electrode passed into the uterus will enlarge the canal to such an extent that the patient will obtain considerable relief from dysmenorrhea. I have tried it frequently. I have had cases come back with the next menstruation almost painless. I have reapplied it in some cases where the pain has returned, and it has again disappeared.

Dr. William Warren Potter, of Buffalo.—I would like to ask Dr. Ross whether he thinks relief followed through the introduction of the electrode acting simply as a dilator?

Dr. Ross.—I think so, the same as in cases of urethral stricture or stricture of the uterus. The canal, as a consequence of the caustic action of the electricity, is certainly enlarged by the destruction of a certain amount of tissue.

Dr. Longyear.—Do you use the positive pole for the purpose of dilating?

Dr. Ross.—Yes; I use quite a strong current.

Dr. Longyear.—My experience is quite the opposite. Relief is afforded for the time being, but the pain returns, and that is one of the great difficulties.

Dr. Ross.—My views may not agree with those of many, but I look upon the introduction of a stem pessary and its retention in the uterus as a source of danger. After dilatation the uterine cavity should be kept as aseptic or antiseptic as possible.

Dr. Carstens.—Please explain how a silver stem pessary or rubber-stem pessary will cause septic trouble in the uterus by its presence.

Dr. Ross.—I remember seeing one case in which a rubber stem pessary was applied, and it was while I was with Mr. Tait. He said this: "That is the last time I will use an intra-uterine stem pessary. I was tempted to do it in this case." The patient's pelvis was matted with inflammatory adhesions, and he attributed the inflammation to the use of the stem pessary. I consider that it irritates the parts, as a silver sound will irritate the urethra in the male. If you tie a silver

sound through a stricture in the male you will have a good deal of irritation, and if you tie a silver catheter in the bladder you will have a good deal of irritation. I believe it is due to irritation of the tissues as a consequence of the presence of a foreign body.

Dr. Longyear.—I agree with Dr. Ross that the stem pessary should not be left in indefinitely, and it should be watched by the physician.

Dr. M. Rosenwasser, of Cleveland.—The performance of dilatation, or of any of these operations, in the office is to be condemned, for the reason that we cannot make a careful and close pelvic examination unless we put the patient under an anesthetic, and if it is necesary to administer an anesthetic, I prefer to do it at the home of the patient rather than at my office. I find that in many cases in which dilatation is practised the stenosis returns from time to time, and it becomes necessary to dilate again and again, whether I use electricity, the sound, or the dilator. I have in one case dilated by means of electricity, and for six months the patient did nicely, but the stenosis has returned. Electricity not only did not accomplish what I wished, but has really produced an organic stricture; I find difficulty at present in introducing a probe where I could formerly do it with ease. The ultimate result is really bad instead of good.

I have observed that stem pessaries will not remain where we place them. They act as foreign bodies, irritating the uterus, and are finally expelled. I do not say that this is the case always, but sometimes it is.

I have seen a rise of temperature in cases similar to the one mentioned by Dr. Longyear which he attributed to iodoform gauze. We may dilate, curette, and pack, thinking we have a thoroughly aseptic uterine cavity, but some septic material may have been left behind. In such event, drainage being obstructed, a rise of temperature follows, whether the stem pessary or gauze pack be used. As soon as the obstruction is removed the temperature goes down.

The essayist is to be congratulated on the three cases in which there was an adherent ovary and retroflexed uterus. I think he ran a great risk in his operation of dilating a uterus that was retroflexed with an adherent ovary. I believe in most cases presenting such conditions operations will be followed by pelvic inflammation.

Dr. Longyear.—There is one point I think that ought to be made a little clearer, and that is in regard to the use of electricity for dilatation. Dr. Ross spoke of using the positive pole for the purpose of dilatation. I think this is bad, for the reason stated by Dr. Rosenwasser, that afterward the parts will contract after cauterization. My

practice has been to dilate moderately with the use of the negative pole, and the negative pole will dilate rapidly, while the positive will not. I have dilated by the use of graduated dilators with the negative current of twenty milliampères in the course of fifteen minutes, so that I could introduce my little finger, yet there was no cauterization whatever. I do not believe it is good practice to cauterize the cervical mucous membrane by using the positive pole and the strong current necessary for that purpose. I believe it will form a scar, which contracts and will leave more stenosis than before the operation.

Dr. Lewis S. McMurtry, of Louisville.—The Association is under obligations to Dr. Pond for bringing such an important subject before it for consideration, and it is one that ought to be discussed very thoroughly. The principles on which the treatment of dysmenorrhea and displacements of the uterus by dilatation of the cervix are based, as well as the treatment of nervous conditions, are ofttimes faulty. In discussing the subject it is common to misapply the analogies that obtain in certain pathological conditions. When it was the fashion to treat dysmenorrhea and sterility a great deal by the use of the dilator, and when the dilator was as much in vogue as the curette and gauze-packing are today, we were told that dilatation of the cervix would cure almost anything. Women with hystero-epilepsy and all kinds of nervous troubles were treated by dilatation of the cervix. It was claimed that this operation brought the same relief in reflex disturbances that divulsion of the sphincter ani muscle does in certain allied conditions, and that it was the same principle. This we know to be erroneous, as there is no sphincter muscle of the cervix uteri corresponding with the sphincter ani muscle, and no similarity of mechanism and function. It is a fact that strictures of the urethra are the sequelæ of gonorrhea; the condition of the cervical canal which most frequently suggests forcible dilatation occurs in young women more frequently than in married women. It occurs in women who have never been exposed to gonorrheal infection. I see fewer cases every year where I think there is anything to be accomplished by using the dilator. I very rarely use it.

I have used the stem pessary, and I quite agree with Dr. Ross that it is harmful. I think there is no difficulty in understanding how it is so. It is an instrument that is introduced into the uterus, and following the analogy that has been already suggested, you may put a perfectly aseptic stitch in the abdominal wall, let it stay there for a certain length of time, until the secretions accumulate in and around it, and you will have redness, and by-and-by pus if it is not removed.

Dr. Carstens.—Do you compare a stich put into muscle or skin with mucous membrane covered by epithelium? Will you tell us the difference between putting a stem pessary in the uterus containing mucous membrane and putting false teeth in your mouth containing mucous membrane?

Dr. McMurtry.—I have hardly ever seen a dilator used that was not followed by hemorrhage, and as soon as you do that you have got an open surface. The cervical mucous membrane is a delicate one. When there is stricture, and you introduce the dilator and separate its blades, you invariably wound the mucous membrane. I have never known a sponge or tupelo tent introduced that was not followed by more or less bleeding from the mucous membrane. When you have an injured mucous membrane to begin with, and then introduce a stem pessary without dilatation, you will have irritation which will end in inflammation. It is there for the secretions to accumulate around it. It seems to me that if we would study these cases more closely, and as suggested by Dr. Ross, anesthetize patients, and make a careful examination, we will find that the fault is not always in the cervical canal, for nearly all of the cases of dysmenorrhea that suggest the use of the dilator are in young unmarried women. As a rule, they are girls in a state of bad general nutrition, the typical boarding-school girl with constipation, impaired appetite, menstrual pain, or in young women who are sterile, who have never borne children, suffering with dysmenorrhea. If you make an examination in these cases under an anesthetic you will find that condition of the uterus which is sometimes called infantile—an imperfect developmeut of this organ. You will find the uterine appendages imperfectly developed. You may dilate the cervix, just as you would take a neurotic man or woman and put him or her under an anesthetic and do any operation, and it is sometimes followed by an improvement in the symptoms. Its moral effect will produce an improvement in the symptoms. You follow the case up, and you will find that it is exceptional that such patients are permanently relieved by dilatation of the cervical canal. Cases of so-called stricture of the cervical canal are rare. Forcible dilatation of the cervical canal is very frequently the initial cause of inflammatory diseases of the uterine appendages. Active intra-pelvic inflammatory symptoms are dated from the time of the forcible dilatation of the cervix by a great many young women who have been treated for sterility and dysmenorrhea.

Dr. Potter.—While prepared to agree with the President (Dr. McMurtry), and with some of the others who have spoken, in much that they have said with reference to the fact that the dilator, like

some other instruments used in the interior of the uterine cavity, has done much harm by being a factor in setting up violent pelvic inflammation which has resulted in matting of the tissues, yet I believe there is a class of cases which is amenable to treatment by the dilator in proper hands. I think that that class of cases was delineated in a measure by Dr. Ross when he referred to hyperesthesia of the lower segment of the uterine mucosa, or what we understand to be the internal os uteri. It is not exactly a stricture, although it has been termed so, and the word has probably led to much controversy. I do not believe it is analogous to stricturous tissue elsewhere. I believe the word hyperesthesia, or excessive sensibility of that region is the correct expression—the nerve-ends are overcharged with sensitive elements. I at one time thought there was a wedge-shaped plug of this hyperesthetic tissue similar to an inverted and perforated cone, extending from the internal os uteri down the cervical canal a little way toward the os uteri externum. I so stated in a paper published about ten years ago. I now believe that pathology was wrong, and the condition is better expressed by the word hyperesthesia.

Moderate, steady dilatation with a dilator which is not likely to rupture the uterine walls, one that would not be likely to subject the operator to the unfortunate or unpleasant accident which Dr. Longyear described, serves in the class of cases mentioned to bring relief. I have demonstrated it over and over again clinically. I know repeated moderate dilatation in those cases of dysmenorrhea in neurotic women, described as rather badly nourished, yet not quite reduced to that extreme condition which the picture the author of the paper drew would indicate, is followed by improvement, and in some cases the dysmenorrhea disappears altogether. This condition is not confined to single women. I have in mind a number of cases; one particularly interesting in a married woman, well developed, a perfect picture of general good health, who had been since her first menstruation practically invalided for a week during every period. I dilated in her case some years ago, and she has never had any return of dysmenorrhea. I mention this case to demonstrate the proper use of the dilator, and I asseverate that in well-selected cases it does improve and cure disease or disturbances which we are the habit of naming as dysmenorrhea. I do not wish to be misunderstood, for I am very tenacious that the dilator shall only be used after the case has been thoroughly diagnosticated, after it has been thoroughly established that there are no tubal complications or other contra-indicating circumstances, and I insist even then the dilator should be used by a careful hand. I believe it is bad teaching to let young men go out from the colleges with the idea

that they can cure every case of dysmenorrhea with the dilator. I believe much harm has been done in that way. I would antagonize that doctrine as long as any man, but I do not wish to go to the other extreme and say that the dilator has no place. I believe it has a place in a well-selected and proper class of cases and in prudent hands.

Dr. George F. Hulbert, of St. Louis.—The conception that dysmenorrhea is due to a stricture is responsible for the methods of treatment that have been advocated to some extent in Dr. Pond's paper, and which are largely practised today by a great many gynecologists who favor all the operations for relieving supposed stenosis of the uterine canal. I am satisfied from investigations in the dead-house extending over a period of ten years, in which I have had the opportunity of examining over a thousand uteri, that the condition of stenosis of the uterine canal in the lower segment is one of the rarest conditions that ever occurs in that organ.

In 1890 at the meeting of the Mississippi Valley Medical Association, held in Louisville, I presented a paper on mechanical obstruction, in which I dealt with this idea of stenosis of the cervical canal. Those who have the conception that the disturbance is not a mechanical, but a functional one, and is resident within the tissue, cannot accept the practice that has been advocated in the past in regard to treating those conditions whose symptomatology is simply dysmenorrhea. The fact that a man fails in an attempt to introduce a uterine sound in flexion of the uterus in a woman whose general condition is that which is often associated with this disorder, is no proof that there is stenosis of the canal. The fact that an attempt was made to introduce any instrument through a faulty uterine canal, whether it be a flexion or any disturbance in position or conformation, and there is failure, is no proof that stenosis of the canal exists. When I use the word stenosis I mean organic stricture, because it is an organic change in the tissues. I believe if any one is careful he can demonstrate in nervous women that are examined that there is just as truly a sphincter muscle immediately underlying the mucous membrane at that point of the uterine canal which we usually call the internal os, as there is at the anus, and in many of these cases where an attempt is made to introduce the sound we meet with positive obstruction; but the man who is exceedingly delicate in the use of instruments will appreciate this condition; whereas if he is not, he will force his instrument through into the uterine cavity and draw blood every time. I believe we have in these cases an element of spasm, of fatigue, or of incoördinate action upon the part of the uterine tissue in the attempt to perform the function of

menstruation. It is simply an exaggerated expression of what normally is resident within the uterus from the time it commences to have existence. We have a positive, persistent wave-like play of contraction and relaxation, which with the congestion of menstruation is exaggerated, and we have spasm, contraction and pain. If this is the understanding, forcible dilatation, or the old word, divulsion, which means tearing and opening of the uterine canal, regardless of consequences sometimes, is not the proper method of handling these cases.

I agree with Drs. Potter and Pond in regard to the judicious use of the dilator, and that its judicious use consists in what might be termed physiological exercise of the tissues resident at that site. Dilatation should be carried on simply within certain limits. At the time the instrument is used, as soon as resistance is felt to any great extent we should stop, allow a few minutes' rest, then dilate again. By physiological exercise there is brought about a release of what is practically an incarceration of the tissue around this particular area. This incarceration of tissue may be a congenital or puerile condition. It may be acquired by obstinate chronic hyperemias which are so persistent in this class of maladies. As a result of persistent hyperemia or congenital defect, there is practically an incarceration of the muscular fibres that make up the particular tissue which we are dealing with. Physiological exercise brought into play with the dilator is judicious, and when properly applied will relieve these conditions.

One more point: I believe it is mechanically impossible for a stricture to occur at the site of the so-called contraction-ring of the uterus under normal conditions. (Here Dr. Hulbert demonstrated his remarks on the blackboard to sustain his belief.)

We have met time and again cases of acute flexions in women who never knew there was anything the matter with them, whose menstruation was perfectly normal and natural, so that I believe the condition is resident within the tissue. The dead-house does not show these strictures. It is the rarest condition in the world to find, and the possible explanation of it is a disturbance in the functional activity of the tissue. Relief of it is not accomplished by divulsion and tearing of the tissue, but by building up the general systemic condition which will enable the local organ at fault to properly perform its function, coupled with judicious mechanical exercise of the affected tissue within physiological limits.

Dr. X. O. Werder, of Pittsburg.—I have been exceedingly interested in the paper and the discussion, and consider the subject a very important one. But I believe with Dr. Hulbert that there is too much

stress laid upon stenosis or stricture of the cervical canal. I think there are two factors in the production of dysmenorrhea in a large majority of cases: one is an infantile uterus, or a badly developed uterus, and in these cases pain is usually a prominent symptom from the beginning of menstrual life. Then we have another class of cases that is perfectly free from pain for the first three or four years, after which they commence to suffer from dysmenorrhea; in these cases we generally find an endometritis which is the cause of the dysmenorrhea and frequently also of a stenosis due to swelling of the uterine mucosa. Cases of badly developed uteri are benefited by tonics, fresh air, exercise, etc., but local treatment is to be avoided. I have a number of times seen young women who came from boarding-schools with a history of very severe dysmenorrhea, who had to go to bed for two days every month, but in whom, after having been home or on vacation for two months or more, all symptoms of dysmenorrhea disappeared. As soon as they went back to school the trouble generally returned. In the cases of dysmenorrhea due to an endometritis I believe the dilator does good, not so much by stretching the cervix and overcoming the stenosis, however, as by producing free drainage of the uterine canal, thereby relieving the endometritis.

Dr. Pond (closing the discussion): I do not wish to be understood that I resort to the knife in those cases that can be cured by means of a light dilator. It is essential, first, to make a careful examination in order to be sure that there is no serious disease of the appendages. If, after a good thorough trial with dilators, we find the dysmenorrhea still continues and the cervix is of a dense cartilaginous nature, then I think the knife will accomplish more than dilatation. But in the majority of cases a light instrument will bring about a beneficial result. I think there is less danger attending the use of the knife in those cases where the cervix is cartilaginous than in forcible dilatation, because with a heavy instrument more harm is liable to be done than with the knife.

EXTRA-UTERINE PREGNANCY: WITH REPORT OF CASES.

By GEORGE S. PECK, M.D.,
YOUNGSTOWN.

In this paper I will not attempt to advance anything new or original upon the subject of extra-uterine pregnancy, but will report briefly a series of cases that have come under my observation during a period of nineteen consecutive months.

Case I.—Mrs. D., aged thirty years; married at seventeen. Has had two children and five miscarriages. Last pregnancy, April, 1886. Has been in poor health seven years. First menstruation at thirteen years of age; severe dysmenorrhea, with scanty flow, lasting five days, and appearing every three weeks, since last miscarriage, which occurred seven years ago.

The dysmenorrhea has been more severe since an operation for the repair of a lacerated cervix in 1888. Last regular menstruation, June 14, 1891. July 5th menses reappeared, flow scanty, black in color, containing shreds, and lasting four weeks. July 24th, while attending to her household duties, she complained of colicky pains in left iliac region, and subsequently extending over the abdomen. Three days later the pains were followed by chills. A physician was called, who treated the patient one week without making a vaginal examination, diagnosis, or giving her any permanent relief.

At 3 A.M., August 2, 1891, I was called to see the patient, and learned that she had been suffering severe pain in the abdomen for some eight or ten days; that menstruation had continued for about four weeks, the flow being scanty, black, and shreddy; there had been no cessation of menses, and no history of pregnancy. At the time of my visit she was having severe paroxysms of pain in the left iliac region, with frequent severe chills. Pulse 90, temperature 100°. Vaginal examination revealed a large, very painful, pulsating mass

in the left pelvis; right tubal and ovarian enlargements with adhesions.

I promptly made a diagnosis of extra-uterine pregnancy with rupture of the tube, and advised abdominal section. Operation refused. Gave morph. sulph. $\frac{1}{4}$ gr. hypodermatically, for the relief of pain. 11 A.M., pulse 100, temperature 100°, pains and chills more frequent and severe; some tympanites and considerable tenderness in the left iliac region. An operation was again urged, but consent was not obtained.

6 P.M. Symptoms very much aggravated, pulse 110, temperature $100\frac{2}{5}$. Patient much weaker. She was not ready to follow suggestions made at previous visits, and was at once sent to the city hospital, and prepared for an early operation.

On *August 3d*, at 9 A.M., assisted by Drs. A. M. Clark and W. H. Buechner, and in the presence of the hospital staff, I opened the abdomen, and found the cavity filled with loose and clotted blood. The left tube and ovary were bound down by adhesions, and were quickly shelled out, ligated, and cut away. The tube was found to be ruptured, and contained placental tissue. No fetus was discovered. The right tube and ovary being diseased, were also removed. After thoroughly irrigating the abdominal cavity with distilled water, a glass drainage-tube was placed in position, and the incision closed with silkworm-gut. With the exception of a severe diarrhea, lasting from the sixth to the tenth day, my patient made an uninterrupted recovery, and left the hospital August 31st, four weeks after operation.

CASE II.—Mrs. J. R. T., aged thirty-one years; a large, fleshy woman, weighing 190 pounds, has had five children and two miscarriages. Youngest child eighteen months old; age at first menstruation thirteen; flow always regular and painless until March 25, 1892, the first menstrual period since the birth of last child. At this time the flow was very free and dysmenorrhea severe. April 22d, the flow was not so free, but dysmenorrhea still severe. April 29th, one week later, the flow reappeared, but the discharge was scanty, black in color, and contained numerous shreds.

May 17th, while at the stove preparing dinner, she was seized with colicky pains in the left iliac region, radiating over the entire abdomen, accompanied by considerable nausea and a slight feeling of faintness. She was assisted to bed, and a physician sent for, who

gave her temporary relief. She was soon able to be out of bed, but unable to attend to her usual household duties.

From *April 29th* to *June 16th*, the discharge from the vagina continued. The nausea and colicky pains were so frequent and severe that she was obliged to spend the greater part of the time in bed. While on her feet she would complain of severe backache and a feeling of weight in the left side as though something ought to come away. I was asked to see the patient in consultation with Dr. J. B. Kotheimer, June 15, 1892.

The patient was in bed, with lower limbs flexed, and complained of considerable pain over the entire abdomen, but more especially in left iliac region. Examinationa *per vaginam* revealed a large boggy mass in the region of the left tube and ovary. Uterus crowded to the right, but not enlarged. A diagnosis of extra-uterine pregnancy was made, and immediate operation advised. She consented at once, and was removed to the City Hospital, June 16th. At 2 P.M., June 17th, assisted by Dr. Joseph Price, I removed the left tube and ovary. The tube, which was very much enlarged, was ruptured during the removal, and contained blood-clots and placental tissue. No fetus was found. The right tube and ovary being diseased were also removed. The adhesions of both tubes and ovaries were quite dense. There was a very small amount of clotted blood in the abdominal cavity. The cavity was thoroughly irrigated and drained and the incision closed with silkworm-gut. She made an uninterrupted recovery, and left the hospital in five weeks. May 5, 1893, the patient has steadily improved in health, and now weighs 234 pounds.

CASE III.—Mrs. D. E., aged twenty-eight years. Married three years. One child, sixteen months old, and still nursing. No miscarriage. Age at first menstruation, thirteen years. Always regular, but very painful. Menses reappeared one month after confinement, recurring every twenty-eight days, and no dysmenorrhea. Last regular flow November 7, 1892. Menses expected December 5th, but did not occur until the 8th. The discharge was scanty, very dark and shreddy, and continued for five days. December 13th, during a shopping expedition, she commenced flooding, which continued until the 16th, when all discharge ceased.

On *December 24th*, at 1 P.M., while sweeping, she was suddenly seized with severe pain in the right iliac region, extending over the entire abdomen, and accompanied by severe vomiting. She ran to

a neighboring house for help, and upon her return fainted. I first saw her at 2 P.M. The pain was severe, and extended over the whole pelvic region; very restless, continued nausea, and vomiting, face flushed, pulse 67, very weak, temperature sub-normal. Examination externally. Exquisite tenderness in the region of the right ovary, the slightest pressure producing violent vomiting. *Per vaginam*, the organs were apparently in a normal condition. At this time it was impossible to obtain any previous history from the patient. I gave, hypodermatically, morph. sulph., gr. $\frac{1}{4}$, and ordered drachm doses of Rochelle salts every hour until bowels moved. At 3 P.M., while being removed to her sleeping-room down stairs she fainted twice.

8 P.M., almost pulseless, face and lips bloodless, sighing respiration; cold, clammy perspiration over the entire body, and presenting all the symptoms of complete shock due to an internal hemorrhage. She had rejected the Rochelle, and was still suffering severe pain. Examination *per vaginam* now revealed a tender, boggy mass in the right ovarian region. I gave, hypodermatically, strychnine sulph. gr. $\frac{1}{25}$, and applied external heat. A diagnosis of ruptured tubal pregnancy was made, but in her present condition I did not think an operation advisable. At 10 P.M., patient reacting under half-hour doses of strychnine, gr. $\frac{1}{25}$. Dr. J. J. Thomas at this time saw her in consultation, and confirmed my diagnosis. I secured a trained nurse, and ordered hypodermatics of strychnine and ergotine every hour during the night. At midnight reaction was still going on nicely.

On *December 25th*, at 9 A.M., reaction complete, pulse 120, and quite strong; temperature 100°; color more natural, and suffering no pain while lying in one position upon her right side. An operation was now suggested and urged, but the family would not consent on account of her weak condition. I advised the nurse to quietly prepare for a section, and I would return at 5 P.M.

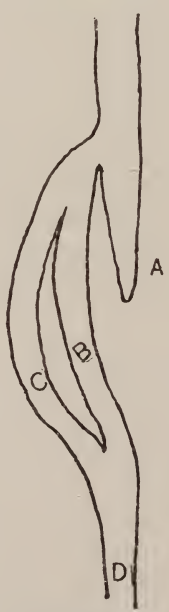
6 P.M. I asked Dr. A. M. Clark to see her in consultation. Peritonitis was now rapidly developing. Abdomen tympanitic. Pulse 134, temperature 101$\frac{2}{5}$°. Features pinched, and complexion anxious. A section was again urged, and after some hesitation the family consented.

At 8 P.M., thirty-one hours after the first rupture, assisted by Drs. A. M. Clark, Booth, Welch, and Montgomery, I opened the

abdominal cavity, which was found to contain about three pints of loose and clotted blood ; rapidly brought to view, ligated and cut away the right tube and ovary. The left tube and ovary being healthy were not removed. I then thoroughly irrigated the cavity (using twelve gallons distilled water), inserted a drainage-tube, closed the incision with silkworm-gut, and put the patient to bed. Pulse 130, very weak. The shock following the operation was well marked, but she reacted nicely during the first twelve hours, made a good recovery, and was discharged four weeks after operation.

The specimen was sent to J. Whitridge Williams, M.D., for examination. The following is his report :

Specimen from Dr. Peck, consisting of the right tube and ovary; the tube being the seat of a very early stage of extra-uterine pregnancy. The



tube is 6 cm. long and 4 and 6 mm. at its thinnest and thickest parts; the fimbriated extremity is free, and there are no adhesions on the exterior of the tube. The lateral half of the tube presents three twists. Near the

lateral end is a small hydatid, 5 mm. in diameter. The uterine end of the tube for a distance of several millimeters appears perfectly normal; then it suddenly expands into an oval mass, 2 cm. in length and 1.5 cm. in diameter. The most prominent portions of this mass present a reddish appearance; on its posterior surface, just about its middle, is a vertical split 8 by 3 mm., through which protrude what appears to be a blood-clot; this represents the point of rupture of the tubal pregnancy.

The ovary measures 3, 1.5, 1.5 cm. in its various diameters; its surface is smooth and presents no adhesions. On section, no trace of a corpus lutem is seen; near the surface are a considerable number of small follices, while its central portion is quite dense.

Microscopical examination: On cutting serial sections of the portion of tube involved by the pregnancy, it is found that its lumen presents most interesting conditions, which may be roughly outlined as follows:

The uterine end is perfectly intact for a short distance, then it gradually becomes filled with canalized fibrin, so that at one point the lumen is all but obliterated. Then the lumen increases somewhat in size, and is marked, flattened out, and the pregnancy at first appears to be connected with only one side of it. The lumen may be traced from its uterine end to the point of rupture of the sac, when all traces of it is lost. It reappears at the lateral side of the rupture, and from thence on it may be traced to the fimbriated extremity.

At first, in the neighborhood of the point of rupture, it appears as a narrow slit with the pregnancy connected with only one side of it. Then further on, toward the fimbriated extremity, one finds two lumina on section, and soon a third appears. On following them up, the third lumen is the first to disappear, and then the second, so that at last there is only one lumen left. This can be readily explained, going from the fimbriated extremity toward the uterus, by supposing that the lumen bifurcates at one point, thus forming two lumina; and that at another point the second lumen also bifurcates, thus making three lumen in all. Then one lumen ends blindly (see drawing) at (A) as a mere cul-de-sac, and the other two lumina (B and C) coalesce once more and form a single lumen (D). This is readily seen on going over the serial sections. As well as we can make out, the pregnancy originated in the lumen (C) and continued into (D), and was not connected at all with either (A) or (B).

At no part of the tube was any trace of the fetus seen, but there was a very marked formation of placental tissue, so that the process must be designated objectively as a tubal mole. The specimen clearly shows that the decidual cells are derived from the fixed cells of the tube, and also shows beautifully, in several instances, the development of giant cells from the endothelium of the bloodvessels.

The ovary is perfectly normal, and shows absolutely no sign of a corpus luteum, so that we are obliged to conclude that the ovum came from the other ovary, and that we have to do with a case of internal migration of the ovum.

A point of great interest is the branching of the lumen, and especially the blind ending of one of the branches. We are unable to say why the ovum should have been arrested as it was; but it is perfectly evident that a tubal pregnancy would have inevitably occurred had a fertilized ovum been driven into the blind end or cul-de-sac (A).

CASE IV.—Mrs W. P., aged thirty years. Twice married. First time at seventeen, second at 25. One child at eighteen years. No miscarriages. Age at first menstruation, thirteen years. Always regular, and flow painless. Has always enjoyed good health. Last regular menstrual flow, December 1, 1892. January 21, 1893, while lifting a tub containing water, she was seized with severe pain in the right iliac region, extending over the lower portion of the abdomen. Her physician, Dr. M. S. Clark, was called at 5 P.M. He found her suffering severe pain, with an anxious expression of countenance, and a weak, thready pulse of 120, temperature 101°. During the past three weeks she had complained at times of colicky pains in the right ovarian region. Nausea was persistent, and her breasts were enlarged and sensitive. Hot applications were ordered and anodynes given.

7 P.M. Pain not so severe, slight vaginal discharge of black, stringy blood. Abdomen tympanitic and extremely sensitive. Examination *per vaginam:* Uterus enlarged, os closed, cervix soft, and a mass in the right broad ligament. The doctor suspected a ruptured extra-uterine pregnancy, and so informed the husband, adding that if such was the case, an operation would be necessary. At midnight the severe pain had gradually subsided, pulse full and strong.

January 22*d.* Pulse 100, temperature 99°; has had free evacuation of the bowels; abdominal tenderness very much diminished, except in left iliac region, which still continued full and tender. Vaginal discharge has ceased.

23*d.* Bowels continued to move freely; fulness in left iliac region entirely disappeared. Sat up the greater part of the day. An effort to stand or walk causes pain in the right ovarian region.

28*th.* Has been feeling much better, and doing light housework, contrary to all advice.

29*th.* Physician sent for in great haste. Stomach rejects everything. Abdomen tympanitic. Pains severe. At times quite regular, and accompanied by a slight vaginal discharge of black, stringy blood. An operation was now advised, but refused.

30*th*. In addition to other symptoms, complains of pains in shoulders, arms, and limbs. Some difficulty in breathing, due to pain in intercostal muscles. Urine heavily loaded with urates. Gave salol, antikamnia, and quinine, ad gr. ij every four hours.

February 4*th*. Has been up and about the house. While walking the body is inclined to the right side. In the recumbent position the limbs are always flexed.

5*th*, 1 P.M. All previous symptoms very much aggravated, and vomiting freely. Given morph. sulph., gr. $\frac{1}{4}$, hypodermatically. At 5 P.M., I was asked to see her in consultation with Dr. Clark. She was suffering intense pain, extending over the entire abdomen. Abdomen very much distended and tender to touch. Features pinched; expression anxious; great difficulty in breathing; hands and limbs cold and clammy; face and lips bloodless; pulse 128, and very weak; temperature 102°, and presenting all the symptoms of an internal hemorrhage. Examination *per vaginam*. A large, sensitive pulsating mass in the right broad ligament. Uterus enlarged and crowded to the left, and a slight, black, bloody, vaginal discharge. The doctor's diagnosis of a ruptured extra-uterine pregnancy was confirmed. An immediate section was advised, and strongly urged, but the patient flatly refused, saying she would die before she would ever consent to an operation. I informed her that there would be a time, very soon, when she would ask for an operation, when possibly it would be too late.

12*th*. There has been a gradual improvement in the symptoms, although the pulse and temperature have remained abnormally high.

14*th*. Still improving, and sitting up.

17*th*. About the house, upstairs and down, and out in the front yard.

18*th*. Considerable bearing-down pain; quite regular, and resembling labor pains; slight vaginal discharge.

19*th*. Same as the day before. Abdomen more tympanitic and tender. Mass much larger and more sensitive.

20*th*. No change, except discharge from vagina increased.

21*st*, 9 A.M. Patient says she is better. Examination does not confirm her statement. Tympanites increased, and she cannot tolerate even the slightest percussion of abdomen. Pulse 120, temperature 102°. The doctor urgently requested that I should be called, to which the patient would not consent.

5 P.M. Rapidly growing worse.

7 P.M. The husband telephoned me his wife was dying, and asked me to see her with Dr. Clark.

7.30 P.M., my second visit, she presented all the characteristic symptoms of collapse due to internal hemorrhage; respiration sighing. The entire surface of the body bathed in a cold, clammy, perspiration. Pulse 134, weak and thready, etc. We at once gave her hypodermatics of strychnine, digitalis, and ergotin, and advised an immediate operation as the only chance to save her life. With death rapidly approaching, she consented. She was at once removed to the City Hospital (one block from her residence), and preparations made for an operation.

At 9 P.M. In almost a complete state of collapse, pulse 150, and scarcely perceptible, ether was administered, and assisted by Drs. Clark and Zimmerman, in the presence of Drs. A. M. Clark, Booth, Welch, and Montgomery, I opened the abdomen and rapidly shelled out, ligated, and cut away the adherent right tube and ovary. The left ovary and tube being diseased were quickly removed. The abdominal cavity contained about a quart of fluid and clotted blood, which was removed by a thorough irrigation with hot distilled water. A three months' fetus was washed out during the irrigation. There still being considerable hemorrhage from the adhesions, I packed the right pelvis with iodoform gauze and closed the incision with silkworm-gut.

9.30 P.M. Operation completed, and patient in bed. Pulse 160, very weak and thready External heat applied, and stimulants freely given hypodermatically and by enema.

22*d*, 9 A.M. Pulse 160, Temperature $101\frac{2}{5}$. At times no pulse can be discovered. Strychnine $\frac{1}{25}$ and nitro-glycerin $\frac{1}{100}$ have been given hypodermatically every hour since 7.30 P.M.

3 P.M. Sighing spell; gave 10 drops tr. digitalis hypodermatically every hour, injected saline solution in the cellular tissue of thigh, and continued previous treatment.

23*d*, 9 A.M. Reacting nicely, circulation stronger; pulse 130, temperature $100\frac{2}{5}°$. Removed gauze packing. There being considerable oozing of bright red blood, a drainage-tube was inserted and cleaned every twenty minutes.

8 P.M. Pulse 120, temperature 100°, patient doing nicely.

24*th*, 9 A.M. Pulse 108, temperature 100°. Removed drainage-

Extra-uterine pregnancy: three months. (Case of Mrs. W. P.)

tube. Bowels freely moved by enema of a saturated solution of Rochelle salts.

March 1. Temperature has ranged from 90° to 100°; pulse from 95 to 105, improving rapidly.

22*d*. My patient made a good recovery and left the hospital.

29*th*. Five weeks after the operation, on account of gauze packing, the lower angle of the incision healed by granulation. During the operation, and for thirty-six hours afterward hypodermatics of strychnine, gr. $\frac{1}{25}$ and nitro-glycerin gr. $\frac{1}{100}$ were given every hour.

The photographs are an accurate illustration of the sac and fetus.

CASE V.—Mrs. G. W., aged thirty-two years. General health good. Fourteen years married. Two children. No miscarriages; last pregnancy, 1882. Age at first menstruation, twelve. Menses always regular and free from pain. I would also add that she was reared in luxury, and, perhaps, in this way differed from my other cases. Last regular menstrual flow January 15, 1892, very slight show February 20th.

February 20*th*. Symptoms of pregnancy now developed. During the morning of March 2d she was apparently in good health. At 5 P.M., upon arising from her bed she was suddenly seized with severe colicky pains in the left iliac region, accompanied by more or less nausea. 6 P.M. While serving dinner she fainted. She was assisted to her bed, and a physician sent for. Upon his arrival, at 7.30 P.M., she informed him that she had had frequent attacks of a similar nature; that it was simply neuralgia of the bowels, and that she would be better in the morning. Her statement was corroborated by her husband. Hot applications were ordered, and anodynes given. 11 P.M. The physician's second visit. Pains not relieved. 5.30 A.M. The patient growing rapidly worse, the physician was again summoned. A ruptured tubal pregnancy was now suspected, and I was asked to see her in consultation.

March 3, 7 A.M. I found Mrs. W. in bed, with both knees flexed, and suffering severe pain over the entire abdomen, especially severe in the left iliac region. Abdomen tympanitic, and very tender to touch. Pulse 128, very weak and thready; temperature 100°; face and lips bloodless; features pinched; expression anxious; sighing respiration; surface of the body cold and clammy, presenting all the symptoms of collapse due to internal hemorrhage.

Vaginal examination revealed an extremely boggy mass in the

region of left ovary and tube, so tender that thorough examination could not be made. A diagnosis of ruptured tubal pregnancy was made, and its immediate removal advised. Upon being informed of our opinion, she requested her husband to send for Drs. Cushing and Allen, of Cleveland (the former having been her old family physician). Gave strychnine, digitalin, and ergotin every half-hour hypodermatically.

7.45 A.M. Upon being informed that she could not survive until her physician arrived, she requested me to operate as soon as possible.

9 A.M. Sixteen hours after the first rupture, with the abdomen much more distended, pulse 140, and the patient in collapse, assisted by Drs. Zimmerman, Welsh, and Booth, I cut down and rapidly ligated and cut away the ruptured left tube and ovary. (See photograph of specimen.) The abdominal cavity contained from two and a half to three quarts of loose and clotted blood. The cavity was thoroughly irrigated, a drainage-tube placed in position and the incision closed with silkworm-gut.

Notwithstanding the frequent use of large doses of strychnine, digitalin and whiskey, together with saline solution, hypodermatically, during the operation, my patient died on the table. Ether was badly taken. I realized the gravity of the case before the operation, but felt that it was my duty to give her the slight but only chance offered by abdominal section.

DISCUSSION.

DR. JAMES F. W. ROSS, of Toronto.—MR. PRESIDENT: I presume I have been asked to discuss Dr. Peck's paper on account of the fact that last year I put nearly all the members to sleep in reading a lengthy paper on ectopic gestation. I wish first to congratulate Dr. Peck on the excellence of his paper. I have seldom listened with so much pleasure to the relation of carefully recorded histories of cases. What impressed me with considerable force as I listened was the fact that we are unable to decide at all times at what period the cases rupture. The next to the last case narrated by the author was on the verge of the grave, and yet made an excellent recovery.

Rupture. *Uterine extremity.*

Tubal pregnancy: fifth week.

(Case of Mrs. G. W.)

In my paper last year I stated the fact, and I do so again, that there is no simpler operation in the range of abdominal surgery than that for the removal of an ectopic gestation, or tubal gestation, which has ruptured in the second and third month. A novice in the operation is much alarmed, owing to the large amount of blood in the abdomen. If he will remember one cardinal point, and that is that he is going into the abdomen to tie a bleeding vessel, and that it is to be controlled by pressure on the tube near the cornu of the uterus, his hesitancy will at once cease. He will be rendered much bolder by that fact in going down to the cornu of the uterus to grasp it; he is thus able to control the hemorrhage, and subsequently to wipe out the old blood, see what he is doing, and not pass the ligature in the dark. If I were called to a supposed case of ruptured ectopic gestation, and had nothing but a pocket case containing three or four pairs of forceps, a lancet, and a piece of absorbent cotton, I should not wait to go home to get other instruments, but would insist on operating at once.

The necessity for washing out has not been proven in these cases. One gentleman has operated on a case in which the abdomen was filled with blood, and having nothing but dirty water, he was afraid to use that, and consequently left the blood there, but the patient made a splendid recovery. I think it is better, however, to wash out the cavity. The cessation of hemorrhage and external outlet to discharges from the peritoneum in a great many cases will relieve the peritonitis. It was only three days ago that I expected one of my cases assuredly would die. She had all the evidences of peritonitis. I took out the drainage-tube twenty-four hours after operation, and hesitated what to do. I took out the stitches, reopened the lower angle of the wound, put in a drainage-tube, and the next morning the temperature came down.

Regarding the question of impregnation in these cases—that it crosses from one tube to the other inside the uterus I do not believe. It is not necessary for the ovum to go into the uterus and across to the other tube. I believe that it wanders from one ovary, goes behind the uterus and falls into the open end of the opposite tube in such cases. The method in which the ovum enters the tube in the fowl is the same, and if we can understand it in the fowl we can understand it in the human being.

The author, I think, acted wisely in waiting in one case for reaction to set in before operation, and saved his patient. If he had operated at the time of shock the chances are that he would have lost her. I think it is important to remember that usually after a period of shock and a period of convalescence, and another period of shock and another

period of convalescence, in the rapidly fatal cases we are likely to have some amelioration in the symptoms by waiting. What produces the shock has been a mystery to me. I had one case of undoubted rupture of extra-uterine pregnancy where the patient was going around with an abdomen full of blood without evidence of shock. The case has already been reported. I suppose it is the blood in the peritoneum that produces the shock, just as we have shock from the rupture of an ovarian cyst, although occasionally such extravasation may occur and no shock result.

One point in the diagnosis, and that is this: These cases simulate either ovarian cyst with twisted pedicle, a ruptured pus-tube, or appendicitis, and the main point in the diagnosis is the finding of the mass behind the uterus, the peculiar treacly, tarry blood excreted from the vagina, and the missing of the monthly period. In one case the period was irregular. This symptom cannot alone be relied upon. If you get a sudden onset of indefinite symptoms in the pelvis, for which you cannot account, together with a mass in the neighborhood of the uterus and a discharge of treacly blood, you are dealing with a case of extra-uterine pregnancy. It is a safe rule, if you have a case that puzzles you with a discharge of blood from the uterus and a boggy, pelvic mass, to make a diagnosis of extra-uterine pregnancy, and you are almost sure to be right. The author said he removed one of his patients two or three hours before operation. If we can avoid doing this it is better to do so. It is not necessary to get a nurse if you can secure a brother practitioner for the time being and until such time as a nurse can be procured. In one of my cases I believe peritonitis was produced by decomposition of the fetus. There is undoubtedly many a case of pelvic abscess that opens into the bowel, rectum, or vagina, that has its origin in the decomposition of the fetus in ectopic gestation.

Dr. William Warren Potter, of Buffalo.—Without entering into the discussion of this subject *per se*, for the admirable paper is beyond criticism, one thought occurs to me in connection with it—namely, that it is somewhat remarkable that the author of the paper should have seen so many cases and operated on them successfully within so short a period. That one fact points out a lesson which I simply wish to draw attention to in a little more emphatic manner. Ectopic pregnancy is a common condition—much more so than until lately was considered to be the case. It is only within the last few years that we have come to appreciate this fact. It is generally the practitioner in the remote district who sees these cases first, and it is he who must sound the alarm, and he should either be prepared to operate

promptly himself, or persuade his patients to obtain the nearest competent surgeon. These are cases in which there is no time to sacrifice, if they are to be saved. Waiting is dangerous. It is prompt action that has characterized the operator in the cases that have been reported. It is a lesson that we may take home to ourselves and give it our most serious, thoughtful attention. His only fatal case was one in which he was compelled to wait until physicians in Cleveland could be summoned. They came not, but precious time was lost—mayhap, disastrously. Dr. Peck is to be congratulated on his splendid record.

Dr. M. Rosenwasser, of Cleveland.—Dr. Potter has called attention to the frequency with which these cases occurred in Dr. Peck's practice, and I will say it is due partly to the fact that the practitioners in his neighborhood have been educated to detect this condition much earlier than in most places. Ectopic pregnancy is much more common than is usually supposed or is claimed by our text-books. We are very apt to run to the other extreme, and advocate operative interference when cases do not require it. Some cases have evidences of rupture, and recovering from shock, get better in two or three days, and resume their work to be a second time prostrated. A physician is called, makes a diagnosis of rupture in the early stage, puts the patient to bed, and says the case is one that requires operation. The operation is refused. The hemorrhage may be limited to a clot, and the clot become absorbed. The patient recovers in four or six weeks without operation. If the diagnosis is not made, and the patient again gets up and about in a day or two, she is likely to have recurrent hemorrhage, especially if the fetus is not dead. One of the author's cases might possibly have recovered without operation. She got up once, had symptoms, and then got secondary hemorrhage. There was no immediate urgency for operation, neither a high temperature, a rapid pulse, nor any other indication. It is not an easy matter to distinguish between those cases of free hemorrhage which end rapidly in death and those which become encysted, or in which there is hemorrhage into the broad ligament, in which the hemorrhage is controlled and the blood becomes absorbed. Dr. Ross has called attention to a case in which operation was performed and the blood not removed from the abdomen, yet the patient recovered. We have these occurrences in ordinary hematocele, which are in most cases extra-uterine pregnancy.

Dr. Ross.—I had one case where the clot suppurated and subsequently ruptured, in which there was acute peritonitis.

Dr. J. Henry Carstens, of Detroit.—It seems to me it is a dangerous thing to leave a foreign substance in the abdominal cavity which

is liable to cause trouble. In the present state of our knowledge of abdominal surgery it is safer to remove it as soon as we make a diagnosis.

I wish to congratulate Dr. Peck on the excellent work he did, and to call attention again to the point made by Dr. Potter with regard to the frequency of ectopic gestation. The fact of so many cases occurring in a comparatively small town in Ohio indicates that many cases are occurring all over the country that are undoubtedly not recognized. We should preach in and out of season the frequent occurrence of extra-uterine pregnancy, and insist on their diagnostication by the general practitioner.

Dr. Peck (closing the discussion).—I cannot agree with Dr. Rosenwasser in regard to case No. 2. She might have progressed nicely for a short time, but eventually would have succumbed to operative interference. I believe every pathological mass in the pelvis should be removed early. During this same period there have occurred in our city three cases, operated upon by different operators, making a total of eight sections, with seven recoveries and one death.

THE NATURE OF SHOCK, AND ITS MANAGEMENT.

By EUGENE BOISE, M.D.,
GRAND RAPIDS.

Those who have had much experience in abdominal surgery have met and learned to dread that condition known as shock, which may occur after an apparently uncomplicated operation.

It is generally accepted that the sympathetic nervous system is the chief factor in its causation, but how it acts, and what is its condition at this time are points of great importance to determine if we will arrive at correct ideas as to rational treatment.

Shock and collapse are generally spoken of as synonymous terms, but very incorrectly, inasmuch as they are related only in this, that severe shock causes a condition greatly resembling collapse. Shock always depends upon a nervous impression (if I may so term it), while collapse may (and frequently does) result from exhausting discharges. The two may be so intimately blended that it will be difficult to dissociate them, but for purposes of study they should be kept distinct.

DEFINITION AND PHENOMENA OF SHOCK.

I may, for the purposes of this paper, define shock as a condition characterized by a certain train of symptoms (to be mentioned later) and caused by some sudden, more or less violent, impression on the sympathetic system of nerves. It may vary in degree from the slightest appreciable disturbance to one so profound as to cause instant death. While the phenomena of shock are always due to disturbed innervation, the causes originating this disturbance may be very varied. They may be mental or physical. The impulse may arise in the brain, spine, cerebro-spinal nerves, or in some portion of the sympathetic system itself. Wherever originating, the

impulse is transmitted to the centres of the ganglionic system, and thence distributed.

These causes may be predisposing or exciting. The predisposing causes are:

1. A weakened condition of the general nervous system, by reason of which it is easily impressed.

2. A depressed condition of the system generally.

3. A despondent, apprehensive mental condition.

It will not be necessary to analyze these conditions, as they suggest themselves to all as naturally predisposing to shock. But the influence of the mental condition of the patient is so important as to merit further remark. The effect of sudden fear in producing increased intestinal peristalsis, relaxation of the sphincters, palpitation of the heart, sudden pallor, etc., is familiar to all, and is nothing more nor less than shock—the impulse being mental in origin and transmitted through the cerebro-spinal system to the ganglionic centres. In the same way a feeling of apprehension or dread of an operation, while it may not be of such a nature nor so severe as to cause actual shock, nevertheless so influences the nerve centres as to greatly lessen their resisting power. It is not necessary to cite instances, as the experience of every operator will supply them, but I simply wish to emphasize the well-known fact, in order that it may not be lost sight of when we consider the treatment of a patient about to be subjected to an abdominal operation.

The exciting cause, when physical, is always some injury to the nervous system. It may be so slight as to cause no organic change, or so severe as to destroy some portion of nerve tissue. Nor is the severity of the shock proportionate to the degree of injury; for instance, a blow on the epigastrium, or the perforation of an intestine, may cause shock so profound as to cause death, while severe injury to tissues in other parts of the body may not be followed by perceptible shock.

PATHOLOGY OF SHOCK.

What then is this shock? It is often described as a paresis of the entire sympathetic system. Again, as a paresis of the respiratory and cardiac ganglia. Again, as a paresis of the circulatory system. Also as an abnormal dilatation of the abdominal veins. But a consideration of the pathology and symptoms will show, I think, that

it is not a paresis; or, if so, that the paresis is secondary. There are several facts which weigh against the theory of paresis, either partial or general. First. It is an established physiological fact that paresis of the sympathetic fibres supplying any part will cause *dilatation* of the arterioles supplying that part. I will here state that I have used the words "sympathetic" and "vasomotor" interchangeably to a certain extent, because if the vasomotor nerves are not technically part of the sympathetic system proper they are so related in function, and so intimately blended anatomically, as to react similarly to stimuli. The vast majority of vasomotor fibres, after leaving the spinal cord, pass to their destination through the corresponding sympathetic ganglia, and in intimate union with other sympathetic fibres distributed to the same parts. Irritation of a ganglion stimulates its efferent vasomotor fibres. An impulse of irritation received by the solar plexus and thence distributed to the various ganglia, is there redistributed as stimulation to all efferent fibres, vasomotor and others.

Paresis of the entire sympathetic system would therefore naturally cause dilatation of the arterioles of the entire body, and the surface would be flushed; but these arterioles are contracted and the surface is pale; therefore it cannot be a paresis of the entire sympathetic system.

But if there could be a paresis of the cardiac ganglia, with normal action of the rest of the system, it would hardly explain the symptoms. Though paresis of these ganglia would weaken the heart and thus limit the amount of blood sent through the arterioles, rendering them partially collapsed, the action of the heart would be slower. The innervation of the heart is from both the sympathetic and cerebro-spinal systems; from the sympathetic through the cardiac branches of the cervical sympathetic, stimulation of which accelerates and strengthens the action of the heart; from the cerebro-spinal through the pneumogastric, stimulation of which slows the action of the heart. Removing normal force through the sympathetic ganglia allows a disproportionate power from the pneumogastric, which is inhibitory and *slows* the heart's action.

But one of the first indications of shock is disproportionate *frequency* of the heart-beats. There is also another point which, while not an argument, is indicative of the true pathology. The cardiac nerves supplying the cardiac ganglia arise from the cervical sym-

pathetic. Now, paresis of these branches would in all probability be accompanied by paresis of the other branches of the cervical sympathetic; or at least they would not be abnormally stimulated while the cardiac branches were paretic. The nerve which controls the pupil of the eye arises from the cervical sympathetic, and *stimulation* of this nerve causes *dilatation* of the pupil. In shock the pupil is dilated.

Again, it has been said to be a paresis of the vasomotor nerves of the abdominal vessels by which these vessels become greatly distended, and the amount of blood in the rest of the body greatly lessened. Most of those who hold this view base their belief on the results obtained by Goltz, of Strassburg, in what is called his percussion experiment. A frog was taken and suspended in a vertical position with the legs downward and the heart exposed. After waiting a short time till the beats were fairly regular and sent the usual amount of blood into the aorta, the frog's intestines (or the surface of the abdomen) were struck with some violence. The heart immediately stopped. The veins of the abdomen were distended and the upper part of the vena cava was empty. Soon the heart began to beat vigorously, but remained empty, because it had no blood supply.

But careful observers, even while admitting the correctness of the experiment and accepting the conclusions, say that there must be something more to account for all the symptoms of shock than paralysis of the abdominal vasomotors. A violent blow on the epigastrium of a frog causes distention of the abdominal vessels and emptiness of the veins in the upper part of the body. In shock, the abdominal veins are distended, but so also are the veins of the entire body, as is shown by the livid pallor, so different from the waxy pallor of hemorrhage, which would be present if the conditions in the man and frog were the same.

Paresis of the vasomotor nerves of the abdomen cannot explain the symptoms. The splanchnic nerve is the great vasomotor nerve of the abdominal viscera. The greater part of the fibres to the renal vessels are given off from the splanchnic. Claude Bernard and others,[1] have found that section (or paralysis) of the renal nerves causes greatly *increased* secretion of urine, because of the increased

[1] Landois and Stirling: Manual of Human Physiology, p. 579.

amount of blood sent to the glomeruli through the dilated arteries. Section (or paralysis) of the splanchnic causes the same condition, but in a lessened degree, because the pressure is lessened by reason of the dilatation of the other abdominal vessels. On the other hand, stimulation or irritation of these nerves, by which the calibre of the arteries is lessened, caused *decreased* secretion of urine. Moreover, any obstacle to the free flow of venous blood away from the kidney, by which backward pressure is increased, causes scanty secretion of urine. In shock there is greatly *diminished* secretion of urine, therefore it *cannot* be paresis of the abdominal vasomotors.

The primary pathological condition in shock is a *hyper-irritation* of the sympathetic nervous system. All involuntary muscles tend normally to rhythmical contraction, and any disturbance of this rhythm is abnormal. Witness the action of the heart; when in health the rhythm is the same, though the frequency of its contractions may be varied. So with the uterus, the intestines, etc. That this rhythmical action is not confined to involuntary muscular fibre, I fully believe, though it is not as easy of demonstration. It undoubtedly pervades all organs and glands whose action is under the control of the sympathetic system, and is induced by the normal balance between the stimulating action of the sympathetic nerve-fibres and the inhibitory action of cerebro-spinal nerve fibres, and is disturbed by a preponderance of either. These two nervous systems are entirely distinct in their functions, but are mutually interdependent. They are not only interdependent as to function, but are so intimately blended anatomically as to be almost inseparable. Cerebro-spinal fibres largely enter into the composition of the solar plexus, and generally accompany the fibres sent off therefrom. On the other hand, sympathetic fibres and ganglion cells penetrate the spinal column and traverse the brain.

The function of the sympathetic system is to promote this rhythmical action of glands, involuntary muscular fibres, and cells. Stimulation of a sympathetic centre increases the action of the parts supplied by its fibres. Stimulation of the fibres supplying the heart and the muscular coats of the arteries increases the contractile power of those muscles and lessens the calibre of the arteries and arterioles. Over-stimulation of those fibres tends to cause *tonic* contraction, and may result in death by spasmodic contraction of the heart.

We can see, by studying the action of the uterus, the mode of action of the involuntary muscular fibre. Under normal conditions, at time of labor, the contractions come regularly at even intervals, beginning at the fundus and passing downward with a wave-like motion till lost in the lower segment. This normal contraction is followed by a period of perfect rest and relaxation. But if the normal stimulus be increased by an excessive use of ergot or external irritation, this rhythm is impaired. The contractions become more violent and frequent and lose their normal peristaltic character, tending to become tonic. The period of relaxation is greatly impaired—so much so that often it is represented simply by a little less violent tonic spasm. After delivery, absolutely tonic hour-glass contraction may supervene. The heart acts, under stimulation, in the same way.

Landois and Stirling, in their work on *Human Physiology*, in speaking of electrical stimulation of the cardiac nerves, say: "A constant electrical current of moderate strength increases the number of heart beats."

"If the constant current be very strong . . . . *the cardiac muscle assumes a condition resembling, but not identical with, tetanus* (Ludwig and Hoffa), and of course this results in a *fall of blood pressure* (Sigm. Mayer)."

Brunton and other experimenters have explained this action by the fact that all non-striated muscles, for instance, the muscular coat of the intestines and the uterine muscle, are induced to increased contraction by an excess of carbonic acid in the blood, and *vice versa*, an excess of oxygen decreases such muscular action. However the explanation may be, the fact remains that stimulation of the fibres of the sympathetic system of nerves supplying involuntary muscular fibre tends to cause increased and tonic contraction of those muscles. Thus the heart is not allowed to dilate or relax fully. The rhythm may or may not be destroyed, but the muscle contracts powerfully and relaxes scantily. So with the arterioles; their calibre is diminished by reason of this tonic spasm, if I may so term it. So with the intestines; their peristalsis is increased.

But this contraction of the arterioles introduces another factor into the process of nutrition and life. By it the amount of arterial blood supplied to a part is lessened. By this imperfect relaxation of the heart the venous system fails to unload itself, and every-

where it is gorged with blood saturated with carbonic acid. And this is the true explanation of the unnatural distention of the abdominal veins, noticed by many observers. Not a stimulation of vasodilators, nor a paresis of vasomotors, but a *stimulation* of the entire "vaso-constrictor" system, by which the entire arterial system is contracted, and the blood of necessity distends the veins.

By reason of this contraction of the arteries and consequent distention of the veins, the cerebrum would not get its proper supply of arterial blood, and its action would be dulled; there would be a condition of mental apathy and an indifference to external impressions and sensations. By reason of this hyper-irritation of the sympathetic system, the heart would contract rapidly and would relax very imperfectly. The pulse felt at the wrist would be rapid and small or almost imperceptible. The extremities and surface would be cool, pale, and livid; the finger-nails, purple; the temperature depressed, and respiration slow. By reason of the general impulse of irritation sent out from the solar plexus, intestinal peristalsis might be increased, and the function of the perspiratory and intestinal glands augmented.

Unlike the kidneys, in which no special secretory nerves have been demonstrated, the sweat glands are supplied with sympathetic fibres whose special office it is to preside over the secretory function. *Stimulation* of these fibres produces free diaphoresis of the parts supplied by those fibres without regard to the vascular conditions. In shock the surface is often bathed in perspiration; nor is the area limited, but the entire body is equally affected, showing irritation of the sympathetic nerve supply to the entire perspiratory system. These secretory fibres almost invariably accompany the vasomotor fibres, often lying in the same nerve trunk.

It is therefore a fair inference that the *vasomotor* nerves of the entire system participate in the *stimulation* which certainly is demonstrated as existing in the *secretory* nerves of the entire *perspiratory* system. This aggregation of conditions, when induced by an impression on the nervous system, is shock, and that impression is of the nature of hyper-irritation.

It is stated in the *Text-book of American Surgery*, edited by Drs. Keene and White, that in cases of sudden death from shock the heart has been found *contracted* and *empty*, a condition that we

should expect, according to this explanation of the pathology. Whether in death from prolonged shock this condition would be found we cannot determine, because it may be that, while the irritant action of the sympathetic continues, and the ganglia are continuously stimulated, the heart muscle becomes gradually weaker, and increasingly unable to propel the scanty supply of blood allowed by the imperfect relaxation, or to overcome the resistance of the persistently contracted arterioles, and the heart might finally stop in a condition of more or less imperfect relaxation.

It has been objected that the condition cannot be one of "tonic spasm" of the heart and muscular coat of the arterioles, as, in that case, the blood pressure in the arterial system would be increased. This objection does not take into account the *imperfect relaxation* of the heart, whereby it can receive only a limited amount of blood. The large arteries have no muscular coat, and they therefore would not be contracted as are the small arteries and arterioles, which have a well-marked muscular coat supplied with a network of sympathetic ganglia. Therefore the small amount of blood received by the heart and sent into the large arteries would not be sufficient to distend them perceptibly, consequently their elasticity would not be sufficient to send a current with force enough to appreciably distend the contracted arterioles, and the blood-pressure would not be high nor abnormally increased. This is explained by Landois and Stirling in estimating the tension of the pulse; that "a small pulse occurs when a small amount of blood is forced into the aorta, as from mitral regurgitation, etc." Again: "Blood pressure is increased with greater filling of the arteries, and *vice versa*." Again, in speaking of electrical stimulation of sympathetic cardiac nerves, as I have quoted above: "If the constant current be very strong the cardiac muscle assumes a condition resembling but not identical with tetanus (Ludwig and Hoffa), and of course this results in a fall of blood-pressure (Sigm. Mayer).

THE MANAGEMENT OF SHOCK.

How, then, shall we treat shock? It will not be necessary, nor shall I attempt, to discuss in this paper the action of various remedies. I shall merely endeavor to indicate a certain line of treatment that appears to me to be desirable, and the remedies naturally to be selected are those sedative to the sympathetic nervous system.

These are principally—

1. Nitrite of amyl for its immediate and temporary effect.

2. Morphine (or preferably codeine) for its slower and more lasting effect.

3. The application of moist heat.

The action of nitrite of amyl in dilating the arterioles is familiar to all, as most of us have seen patients on the operating-table suffering from severe shock, with an almost imperceptible pulse, rally promptly after the inhalation of nitrite of amyl, the pulse becoming fuller and slower. As to morphine, it must be given in sedative doses in order to get the fullest benefit from its use. It is known to be a true sedative to the nerve centres, ganglionic as well as cerebro-spinal, and in this way tends to relax spasm and allow the arterioles to dilate normally, thus restoring the vascular equilibrium and relieving shock and its consequences. In heat we have a most powerful and reliable agent in influencing the circulatory apparatus. I cannot, in the short space of this paper, discuss in any degree its mode of action, but can simply offer some conclusions arrived at through the researches of others. The skin is, as you all know, a network of arterioles and capillaries, and accompanying these vessels are corresponding fibres of sympathetic nerves regulating their action. In health the application of moist heat to the surface produces a sudden stimulation of the nerve fibres, with corresponding contraction of the arterioles, to be quickly followed by a prolonged period of sedation, whereby the arterioles are relaxed, or dilated, and the skin becomes suffused with blood. Neumann, by a series of elaborate experiments, demonstrated that intense stimulation of the surface by hot water diminishes cardiac force and activity, dilates the vessels and slows the current. And this is exactly what is desired in severe shock. He also showed that cooling or heating the blood current itself affects the cardiac ganglia.

That this is practically true has been shown in two cases recently reported as occurring in the practice of Dr. Mundé, of New York. Both cases were suffering from profound shock, threatening immediate death. One case was complicated by excessive hemorrhage; in the other there had been no appreciable loss of blood. In both cases transfusion into a vein with a large amount of water, heated to 118° or 120°, was practised with immediate improvement in all the symptoms and ultimate recovery of the patients.

Thus it seems to be proven that the general application of moist heat to the surface acts: first, locally on the nerve fibres, supplying the arterioles of the skin itself, relaxing them; and second, reflexly through the solar plexus on the entire sympathetic system. The injection of hot water into a vein accomplishes the same purpose more directly, by acting as a sedative to the ganglia of the heart and arterioles and allowing their muscular fibres to relax.

In accordance with this view of the pathology of shock, I venture to offer the following suggestions:

The physical preparation of a patient about to be subjected to an abdominal operation must be as thorough as possible. It is well to begin the treatment of the skin and bowels two or three days previously. When a patient is much prostrated physically the diet must be as nutritious as possible, and yet such as to leave little residue up to twenty-four hours before the operation. Any feeling of apprehension that may exist must be quieted as thoroughly as possible. When the operation is begun such haste as is compatible with safety must be made, inasmuch as prolonged anesthesia adds to the element of exhaustion, and the more manipulation there is the greater the irritation, and hence the more pronounced the shock. All manipulation must be as gentle, rapid, and sure as possible, and the operation completed with the least possible violence. The operating-room must be warm, the patient's surface not chilled, and the patient finally put into a warm bed with dry warm clothing.

As for medication, nothing in the way of prophylaxis is better than the administration, hypodermatically, just before the anesthesia, of a half-grain or more of codeine. Dr. Stephen Smith, in an article published in the *Medical News* of October 11, 1890, says that for eight or ten years he has prepared his patients for operation by rendering them partially intoxicated. They then have suffused eyes, flushed face and skin, and a slow and full pulse (all indications of a sedative or paretic condition of the sympathetic system), and that he has never in all that time had a case of severe shock. Therefore, for prophylaxis quiet the mind of the patient and produce sedation of the ganglionic centres.

Shock occurring on the operating-table must be met principally by lowering the head of the patient and the inhalation of nitrite of amyl. Mild shock following operation is to be treated mildly—keeping the patient as quiet as possible, warm and free from all

annoying or disturbing influences. Severe shock is to be combated actively. The most favorable surroundings possible must be secured, with freedom from all annoyance. The mental condition must be kept as quiet and serene as possible. A free dose of morphine or codeine, administered hypodermatically (all medicines should be given in this way), with nitroglycerin and possibly strychnine. This last drug stimulates the sympathetic system, but it stimulates much more actively the cerebro-spinal system, and may thus, by tending to increase the power of the inhibitory nerves, regulate or control the heart and arteries.

But I think the main reliance must be placed on moist heat. Externally, it may be employed in the form of the hot wet pack, or the hot bath; internally, by the injection, through the long tube, into the colon, of large quantities of very hot water, thus bringing the heat into very close proximity to the solar plexus. Or, in cases where there has been free hemorrhage, or where the patient was, before operation, anemic and exhausted, transfusion of as large quantity as possible of *hot* saline solution as practised in Dr. Mundé's cases. In this way the temperature of the entire blood current is raised, and the ganglia of the heart and arterioles are subjected to the direct sedative influence of moist heat. This outline of treatment is simply indicative of that plan which, in my opinion, offers the greatest hope of success in the treatment of severe shock.

CONCLUSIONS.

To sum up, therefore, shock is not a general paresis of the sympathetic nervous system, because:

1. The entire arterial system is contracted rather than dilated.

2. The skin is moist, or bathed in perspiration, by reason of the irritation of the secretory fibres of the sweat-glands, instead of dry, as it would be in pallor of the skin, low temperature and *paresis* of sympathetic fibres.

It is not a paresis of the cardiac nerves and ganglia, because:

1. The heart's action would be slow, by reason of the preponderance of the inhibitory influence of the pneumogastric.

2. It is not probable that cardiac branches of the cervical sympathetic would be paretic, while other branches were abnormally

stimulated; and in shock the pupils are *widely dilated* by reason of the *stimulation* of the pupillary branch of the cervical sympathetic.

It is not a paresis of the vasomotor nerves of the abdominal vessels, because:

1. Paresis of these nerves would cause *dilatation* of the abdominal arteries.

Dilatation of the renal artery would cause polyuria, even if accompanied by dilatation of the other abdominal arteries. In shock the secretion of urine is scanty or even suppressed.

2. Dilatation of abdominal arterioles would cause *decreased* intestinal peristalsis. In shock peristalsis is often increased.

On the other hand, it *is hyper-irritation* of the *entire sympathetic system*, because:

1. The skin is pale and livid by reason of *contraction* of the arterioles, because of *stimulation* of their vasomotor nerves.

2. The heart's action is rapid by reason of *stimulation* of its sympathetic nerve supply.

3. There is scanty secretion of urine by reason of contraction of the renal arteries, the result of *stimulation* of their nerve supply.

4. The skin, though pale and livid, is bathed in perspiration by reason of *stimulation* of the secretory nerves of the glands.

5. The pupils are dilated by reason of *stimulation* of their sympathetic nerve supply.

6. The pulse at the wrist, while rapid and small, as would be expected in vasomotor stimulation, is soft and *very compressible*, by reason of the very scanty relaxation or dilatation of the heart.

7. The condition of the heart may not have been actually demonstrated, but may justly be inferred by analogy, reasoning from the action of the uterus under similar conditions. Each contraction of the uterus is normally followed by a period of perfect relaxation, as is the heart. Over-irritation or stimulation of the uterine ganglia or sympathetic nerve supply causes *rapid* contractions, with *very imperfect relaxation*. It is fair to infer the same condition in the heart under similar causation. Thus the supply of blood thrown into the arteries is scanty, and arterial blood pressure is *low*.

8. The first five of these conclusions are justified by well-known experimental demonstration. The sixth and seventh are fair conclusions by reasoning from analogy.

9. That the condition of the heart is one of stimulation rather

than paresis, may be considered demonstrated by the fact that in cases of sudden death from severe shock the heart has been found *contracted and empty.*

Finally, admitting the correctness of this pathology, it follows that our treatment should be on the line of *sedation* to the sympathetic system—as by nitrite of amyl, nitroglycerin, morphine, and the application of moist heat—

1. To the surface.
2. Through the long tube into the colon.
3. Transfusion of saline solution at a comparatively high temperature.

DISCUSSION.

Dr. J. Henry Carstens, of Detroit.—Mr. President: I wish to congratulate Dr. Boise on bringing before us one of the most important subjects we can consider. There are some questions in regard to shock that are still *in status quo*, and taking the whole question in all of its bearings, as outlined by the essayist, it is one that we can study and look up at our leisure. We are under great obligations to the author for bringing the subject before the Association; and it is to be regretted that owing to the lateness of the hour it is not practicable to enter into a full discussion of the paper this evening.

A CONTRIBUTION TO THE SURGICAL PATHOLOGY OF THE GALL-BLADDER AND DUCTS.

PRIMARY CANCER OF THE HEPATIC DUCT—OCCLUSION OF THE CYSTIC DUCT.

By WALTER P. MANTON, M.D.,
DETROIT.

The chief purpose of this paper is to present the history and post-mortem findings in a case of diseased gall-bladder and ducts, hoping thereby to augment, in some slight degree, our knowledge of the pathology of this important and interesting department of abdominal surgery.

P. F., male, was transferred to the Eastern Michigan Asylum[1] in August, 1878, where he remained a patient until the date of his death, April 1, 1893, being then fifty-nine years old. His mental symptoms were characteristic of dementia with delusions of suspicion and persecution. For years previous to his last illness he had been employed on the asylum farm, working under the supervision of an attendant and enjoying the liberties attached to an open-door cottage. He was a man of spare frame, but seemed to have uniformly good bodily health up to the time of the attack to which he ultimately succumbed.

Early in December, 1892, it was noticed that he began to present a jaundiced appearance. Associated with this there was some increase of apathy of mind, but he was free from fever, and denied that he felt badly.

During January and February, although the jaundice steadily increased, he did not seem to fail much otherwise. His appetite remained good; he was able to smoke, and remained up and about the house, although not permitted to work.

[1] I am indebted for the history and notes of this case to my friend Dr. E. A. Christian, Assistant Superintendent of the Eastern Michigan Asylum.

Cholagogues were tried up to the patient's tolerance of them without any lessening of the retention of bile in the system. During this time there was no noticeable loss of flesh, no anasarca nor ascites. The most careful abdominal palpation failed to reveal any evidence of hepatic obstruction.

March 18th, it was noted that he was growing weaker, and he was therefore transferred to a hospital ward. On March 20th he had a severe chill about noon, followed by several dark-colored, watery evacuations from the bowels; previous to this the stools had been wanting in coloring matter. Examination of the abdomen at this time revealed a noticeable bulging, without localized swelling on the right side in the region of the liver.

A mass, taken to be the large lobe of the latter organ, could be felt extending a hand's breadth below the margin of the ribs. Elsewhere the percussion note was resonant. Careful examination failed to reveal the presence of anything like a fluctuating tumor. The urine was heavily charged with bile during this entire period.

From this time on he continued to fail rapidly. An herpetiform eruption appeared on his lips, along the edges of his eyelids and at the anterior nares. These blisters were filled with bloody serum, and, breaking down, formed repulsive crusts. Death occurred on the first of April.

Post-mortem examination, twenty-four hours after death. The body emaciated and deeply pigmented, the discoloration varying from bright yellow on limbs and trunk to deep bronze on face. Lips and margins of nostril swollen and covered with large scabs. Right eye closed by edematous swelling.

On opening the abdomen, evidences of plastic peritonitis were present in the right hypochondriac region—the omentum, transverse colon and coils of small intestines being agglutinated into an almost inseparable mass—evidently the portion felt before death and mistaken for an enlarged lobe of liver.

In separating these parts a cyst was ruptured, which subsequent examination showed to be the enlarged gall-bladder, barely projecting beyond the margin of the liver. The liver itself was enlarged, extended backward and upward, but did not project beyond the edge of the ribs. All the abdominal viscera were deeply stained. There was no fluid in the abdominal cavity, nor evidence of perito-

nitis beyond that already mentioned. The liver, gall-bladder, ducts, pancreas, and duodenum were removed entire.

Subsequent examination revealed the following conditions present: the distal end of the cystic duct open for about an inch, and apparently normal in diameter; at the proximal end a firm wall of fibrous tissue, fully one-fourth inch in thickness, in the recent state, completely occludes the lumen of the duct. From the bladder side there is not even an indication of a previous opening.

The hepatic duct is greatly distended, and when slit up reveals a tumor of a dark green color and moderately soft consistence, about one and one-eighth inch in diameter. The growth is bilobed. One portion springs from just within the opening of the duct, the rest from the common duct, thus forming a broad base behind and to one side of the tumor, but completely occluding the mouth of the duct. The opening is further closed by a thin fold or reduplication of tissue, which undoubtedly acted as a valve, impeding the outflow of bile.

The common duct is apparently normal in size and length. The gall-bladder contained about two ounces of grayish, somewhat viscid secretion, and one small friable stone. Its walls, particularly the external, are very considerably thickened, but the lining is ulcerated in patches, so that in places it is quite thin, and explains the cause of rupture during its removal. Microscopical examination of the tumor by Dr. George Duffield showed it to be of a carcinomatous nature. The tissue was much broken down, but here and there islands of cells indicated the malignant character of the growth.

Remarks.—The symptoms usually presented in cases of malignant growths of the bile ducts are jaundice, pain, and gastro-intestinal disturbances—symptoms much resembling those resulting from gall-stones, except that the pain appears to be more persistent, less paroxysmal and less acute than in the latter condition. According to Musser, the latest author on the subject to whose writings I have had access, "no general symptoms arise to lead one to suspect the presence of a malignant tumor, or they are masked by the jaundice." From an analysis of eighteen cases this observer finds that the condition occurs equally in both sexes, and arises at about the same period of life in each. The gall-ducts are much less frequently invaded by malignant new growths than is the gall-bladder, and in

only three of the eighteen cases recorded was the disease found to involve the hepatic duct alone, the usual site being the common duct.

In the case presented, one feature is particularly worthy of note, the absence of all symptoms excepting jaundice during a period of several months. Under such conditions the diagnosis of malignancy is impossible, and surgical aid, from which the prolonging of life and possible cure might be expected, is rendered out of the question until the physical state of the patient absolutely precludes operative interference.

A FEW PRACTICAL NOTES ON THE ESTABLISHMENT OF ANASTOMOSIS BETWEEN THE GALL-BLADDER AND INTESTINES FOR OBSTRUCTION OF THE COMMON DUCT,

WITH THE RELATION OF A CASE OF THE OBSTRUCTION OF THE COMMON DUCT BY A SMALL GROWTH.

By JAMES F. W. ROSS, M.D.,
TORONTO.

Reading with a great deal of interest a paper of my friend, Dr. J. McFadden Gaston, of Atlanta, Georgia, on "The Practicability of Establishing an Artificial Fistulous Opening in the Human Subject Between the Gall-bladder and the Duodenum," I determined that as soon as an opportunity presented itself I would carry out the procedures of the operation as outlined by him in that article.

Having some time previously operated on a case of gall-stone impacted in the cystic duct, I concluded that cases would be met with in which the operation of incising the duct and removing the stone would not be practicable. Sometime after this a patient from the country consulted me regarding a lump in the right hypochondriac region. This growth was accompanied by profound cholemia, together with a dilated condition of the stomach. From the patient's age, between seventy and seventy-five, and her cachectic appearance, together with the pain present in the tumor, the size of the tumor, with the irregularity of its surface and the dilatation of the stomach, I concluded that the case was, in all probability, one of malignant disease affecting the pyloric end of the stomach, compressing the common bile duct, and thus producing the symptoms present. I was supported in this view by another physician. We advised against any operative procedure; the patient looked

very frail, and as if on the verge of the grave. I had not forgotten the lesson taught by the cases of others simulating malignant disease; but I concluded that in this case, at least, I had to do with malignant growth. The time passed by, and I heard nothing more of the patient. One day a gentleman appeared at my office, and in the course of conversation began making inquiries regarding the case of his mother. After we had gone over the case together, he drew out from his pocket a large pill-box, from which he removed a very large gall-stone. This, he told me, was the cancerous disease found at the *post-mortem* examination upon his mother. He seemed to have the idea that the abdomen in women of seventy or seventy-five, in the last stages of cholemia, with distended gall-duct, could be opened and a stone removed from the midst of dense adhesions without the least danger. Had I known that the enlargement was due to the impaction of a gall-stone, I would certainly have refused to operate. This was a lesson not to be forgotten and one to be treasured.

A little later, on December 14, 1892, my friend Dr. Cotton, of Toronto, brought to my office a young woman, twenty-six years of age, very yellow in color, and suffering from intense jaundice; her tongue was fairly clean, her urine, she said, was dark-colored, while her stools were pale and clay-like. She suffered considerably from heartburn; she had very little pain. During the last winter she had a severe attack of pain at the pit of the stomach; this lasted for one day. The pain was so severe at the time that for some days the edges of the ribs felt sore. Three months ago jaundice came on; it gradually deepened. She suffered from pain behind the shoulder and from vomiting. The pain was very nearly as severe as it had been the year before. For the last two months the motions had been light in color, the urine stained the clothing yellow; yellowness of the skin came on; she had some bleeding at the nose, but she thought not more than she had been accustomed to. She had been married six years, and had one child.

On examination, a hard nodule could be felt about one inch and a half below the tip of the ensiform cartilage, a little to the right of the median line. Further toward the loin a movable, smooth, tense fluctuating swelling could be readily made out, corresponding in outline to a distended gall-bladder. The nodule referred to was hard, and a cord could be felt running from it toward the gall-

bladder, and this cord proved to be the common duct. From the symptoms of the case, together with the previous attack of colic one year before, I diagnosed obstruction of the common duct by an impacted gall-stone. The liver was enlarged and extended about an inch below the free border of the ribs on the right side.

As I was going to a meeting of the Clinical Society that evening, Dr. Cotton and I decided to exhibit the case. She consented, and during the evening she was presented to the society. The lump was felt by several members, and the gall-bladder itself was readily made out. I mentioned the fact that I had already been in error in the case previously related, but thought that this time there could be no doubt about the diagnosis. Operation was decided on, and on the 19th of December, 1892, assisted by my friend, Dr. A. H. Wright, I opened the abdomen along the margin of the ribs on the right side. Bleeding from the wound was rather troublesome; the liver was found much enlarged; the gall-bladder very much distended; and the hard mass previously felt was found to be evidently in the common duct. On closer manipulation this mass did not feel hard enough for a stone; it was smooth and rounded; but for all that I determined to make the diagnosis by means of a needle. The needle passed down into the mass, did not strike any hard tissue, and its withdrawal was accompanied by a discharge of blood that seemed to be more profuse than would follow puncture of a gall-duct with an impacted stone. I now decided that, notwithstanding the small size and deceptive appearance of the lump, it must be a growth, but I feared that subsequent *post-mortem* examination might even yet prove that I was mistaken.

I now opened the gall-bladder, emptied it of very dark treacly-colored bile, explored its interior, fastened it to the abdominal wall, and washed it out. Fresh bile began at once to flow through the gall-bladder. The common duct was distended to the thickness of a man's thumb, and the bile ducts and the liver were found to be distended in corresponding proportion. Had the obstruction in the common duct been due to the impaction of a stone I doubt very much the advisability of incision of the duct for its removal under such circumstances. I now decided to drain the gall-bladder, and by permitting of the external flow of bile to relieve the jaundice. The wound was closed after all hemorrhage had been checked. A drainage-tube was fastened in the opening in the gall-

bladder, and the end of it was carried some distance beyond the dressings. During the next few hours the pads over the drainage tube were soaked with bile. The patient's nose bled and blood was spit up; this showed the hemorrhagic tendency. About twenty-four hours after the operation secondary hemorrhage from the incision set in. Pressure was applied, and the sutures were tightened by means of forceps; perchloride of iron was used, but the hemorrhage still continued. Forty-eight hours after the operation the patient was again placed on the table, chloroform was administered, and the wound was reopened throughout its entire extent, except at the point of insertion of the gall-bladder. The hemorrhage was now found to be a general oozing from the cut surface of the right rectus muscle, and to stop this it was necessary to pass two sling sutures around the muscle above and below the incision through it. These were tightened and the ends of the muscle were held against the abdominal wall, and in this way the bleeding was checked. The patient then made an uninterrupted recovery; the wound healed, strange to say, by first intention; the fistulous opening in the gall-bladder contracted down until it would barely admit a probe. The epistaxis continued from time to time, but did not give rise to any alarm. The patient gradually changed color, and soon all evidences of jaundice had completely disappeared. On two or three occasions some blood was found mixed with bile. The urine became a lighter color.

During the performance of the second operation for the control of the hemorrhage I had a good opportunity of examining the manner in which Nature walls off the point of invasion of the peritoneum from without, and protects the system from the introduction of foreign matter. The intestines were adherent around the opening, and the liver was covered with adhesive lymph. The patient was soon able to walk around, but complained bitterly of the inconvenience of the bile-stained pads. Had it not been for this fact I should have refused to do anything further. I advised her to go home for a couple of months, and to return at the end of that time. This she refused to do, and begged of me to perform some further operation for the closing of the fistulous opening.

As Dr. Gaston's operation had been done by himself successfully on dogs, I decided to produce, if possible, an anastomotic opening between the duodenum and the gall-bladder by the means recom-

mended by him—namely, the use of an elastic ligature. A piece of strong elastic was procured that would thread a small needle. On the 1st of February, 1893, the abdomen was opened just below the line of the old incision. The right rectus muscle was divided. The parts were dissected off with care, and it was found that the general peritoneal cavity had been shut off from the site of the previous operation by very firm adhesions. It would have been impossible to reach the growth with any degree of safely through these adhesions, as the liver had diminished in size, and the growth, together with the common duct, had been drawn up under the ribs. The duodenum was found lying close to the gall-bladder, and through its wall the needle with the elastic ligature was passed, while the thread was held on the stretch by my assistant. The needle was then passed through the wall of the gall-bladder. About half an inch of duodenal and gall-bladder wall was now included in the loops thus made. The stitch was drawn tight and firmly tied, the ends were cut off short, and the abdomen was again closed with silkworm-gut sutures.

The feces were watched for bile, but, much to my disappointment no bile appeared. One day my assistant thought he obtained the reaction for bile with nitric acid, and the nurse thought the feces looked tinged, but only to a very slight extent. For a time the discharge of bile now seemed to diminish. This diminution may, however, have been more apparent than real. The nurses noted on the history paper frequently, "Pads changed, less discharge." The wound healed by first intention.

On the sixteenth day after the operation, as the patient was becoming disappointed, I passed a probe into the gall-bladder through the fistulous opening, and found what felt to me like a portion of the elastic ligature. I passed the probe into the wall of the gall-bladder, and found that it readily perforated the wall, and went through, apparently, into the duodenum. The probe was fastened in this position, and left there for two or three days, but still I could see no greater evidence of the discharge of bile by the bowel than before. I therefore dilated the fistulous opening into the gall-bladder, passed in my little finger, and felt the opening through the wall, but could not feel any elastic ligature.

As the patient's husband had become seriously ill, she now left the hospital. I was annoyed at this, because with the dilated opening into the gall-bladder, and thus having a ready access to its in-

terior, I felt sure that I could now complete the formation of the fistulous opening without difficulty. The patient did not return for two weeks. After her return blood was noticed mingled with the discharge of bile. This gradually increased. Pressure on the gall-bladder failed to arrest the hemorrhage. It oozed out drop by drop from the opening into the gall-bladder. Thinking that it might, perhaps, be due to hemorrhage from the edge of the gall-bladder, I touched this with the actual cautery without producing any perceptible effect. Though the probe passed through the gall-bladder wall, no fecal matter and no intestinal flatus came through. Thinking that perhaps the hemorrhage came from the gall-bladder wall, I injected styptics, beginning with a saturated solution of alum, and ending with a solution of the perchloride of iron and water. These had no effect, excepting that they produced coagulation of the blood. The patient complained that the solutions produced pain in the shoulder similar to that experienced before the gall-bladder was opened. As the bleeding still continued, I determined, if possible, to find out the cause. I felt afraid that the elastic ligature had lacerated into some small vessel. I therefore re-dilated the gall-bladder and explored its interior, but concluded that the blood was coming from the direction of the cystic duct. I now packed the gall-bladder with iodoform gauze. This checked the hemorrhage to a certain extent, for a time, but it soon oozed through as rapidly as ever; and the patient complained of such pain in the shoulder from this distention of the gall-bladder by the packing that I was forced to remove it. The patient died on the 9th of March from the effects of the continuous hemorrhage.

Post-mortem examination report made by Dr. N. A. Powell, one of the pathologists of the Toronto General Hospital:

"Abdomen open in the middle line, and the skin reflected so as to expose the site of the operation at the free border of the ribs on the right side. A clot three inches long by one and a half inches wide, conical in shape, found occupying an opening through the abdominal wall. On tracing this down it was found situated in the gall-bladder, the latter being attached to the skin by firm adhesions. The clot was firm, such as results from the action of the perchloride of iron on the blood when applied as a styptic. A cavity sufficient to hold two and one-half ounces of fluid was found when the clot was removed. On inspecting the interior of the gall-bladder, an

opening was found through the wall among dense adhesions in the peritoneal cavity. This opening was large enough to admit a No. 20 French catheter, and lay in front of and to the right of the common bile duct, with the duodenum lying immediately beneath it adherent to the gall-bladder and abdominal wall. This had evidently been made by some instrument some time before death. Situated behind and to the left of the duodenum and common bile duct, pressing upon the bile duct in such a manner as to easily occlude it, was found a growth as large as a walnut, firm, elastic, and smooth. No trace of the elastic ligature that was said to have been used for the purpose of producing anastomosis could be found. The liver, on being divided, bled very freely. There were no evidences of any general peritonitis, and the seat of the operation had practically become extra-peritoneal by the dense adhesions that had formed around the opening. The stomach contained a quantity of dark fluid. The only trace of any opening made by the elastic ligature was the sinus above mentioned. The duodenum, where stitched, must have healed, as the elastic ligature worked itself away toward the interior of the gall-bladder. The duodenum was firmly adherent to the gall-bladder at the site of the elastic stitch. The gall-bladder was pervious to a hard substance such as a probe, but would not permit of the passage of the bile, owing to the pressure of the growth.

"The hemorrhage evidently came from the liver, and not from the site of the insertion of the elastic ligature. Two or three ounces of blood were discharged from the cut surface of the liver.

"On microscopical examination, the tumor was found to be a glandular epithelioma."

The loss was slow but sure. As shown by the *post-mortem* examination, it would have been impossible to check it.

I have now related this case at some considerable length, hoping that it may produce some discussion that will be of benefit to us all. There are several questions that arise in the minds of the surgeon, such as: First, what is the best means of producing anastomosis between the gall-bladder and the intestine? Secondly, is it better to open and drain the gall-bladder, and to allow the patient to live out his or her life with a permanent fistula, or to attempt to produce an anastomosis in such a case as the present one; that is, in a case in which we have to deal with an obstruction of the common

duct due to a malignant growth? Thirdly, in obstruction of the common duct by the impaction of a gall-stone of large dimensions, with the patient profoundly cholemic, is it better to leave the stone *in situ*, to open and drain the gall-bladder, with the intention of producing a subsequent anastomosis, between the gall-bladder and intestine, or to incise the duct and remove the stone at the first operation? As to the methods of producing anastomosis, I will in future resort to direct incision and direct suture. The elastic ligature in this case did not fulfil my expectations. The peritoneal cavity at any secondary operation is so shut off by adhesions that a slight escape of bile or feces, after the direct incision of the duodenum or gall-bladder, cannot be of any serious moment if proper drainage through the external opening is provided. I thought of various devices for carrying out this anastomosis. I procured plates after the model of the intestinal anastomosis plates, and thought of incising the bowel, passing in a plate and then passing the ligatures through the bowel and gall-bladder, and of bringing them out of the original opening into the gall-bladder, and holding them in place by means of a pair of artery forceps passed into the gall-badder through this external opening until firm adhesions had been formed. I then intended to incise the gall-badder wall over the opening in the intestinal anastomosis plate, that could be readily felt with the little finger passed into the gall-bladder. On more mature consideration, I concluded that hemorrhage might readily result from such an incision, and that such a hemorrhage might be very difficult to control. It is better to have the hemorrhage occur as the consequence of incision at the time, when it can be readily controlled.

In reply to the second question, I believe that it would be better to open the gall-bladder, establish a fistulous opening, and allow the bile free exit, and to do no more in these cases of malignant growth.

In answer to the third question, I feel sure that with a patient in a condition in which this patient was originally found, with jaundice, enlarged liver, and enormously distended gall-ducts, it would be better to drain the gall-badder for a time before carrying out any further procedures. In this way the gall-ducts become diminished in size, and there is much less danger of the subsequent extravasation of bile into the peritoneal cavity. Owing to the free egress of the bile through the cystic duct and gall-badder, no tension will be put upon the sutures applied to the incision required in the common

duct. If an anastomosis can be readily made at some subsequent period, the presence of a gall-stone is not likely to be a very serious inconvenience.

I would remark that, according to my experience, wounds in bile-laden tissue heal readily and with very little evidence of inflammatory action. A great tendency to hemorrhage is, however, to be noted.

Quoting from Gaston, I find that he gives credit to Nussbaum for first suggesting operation for the relief of occlusion of the common bile-duct by conveying the bile into the intestinal canal through an artificial opening between the gall-bladder and intestine, and he gives credit for having first accomplished these results upon the human being to von Winiwarter. Von Winiwarter subjected a patient to six different operations for the formation of a fistula between the gall-bladder and the colon. So that I need not feel badly over the result in my own case. As far as I know, my own case is the second on record in which the elastic ligature has been used for the purpose of establishing a cholecystenterostomy on the human subject, and I am sorry that it failed to establish the fistula.

Gaston gives a very interesting report of the progress of the operation of cholecystenterostomy. In 1887 Mownastyriski united the gall-badder with the duodenum by a direct suture, excision of a portion of both jejunum and gall-badder by puncture, and union of the edges with catgut. The patient survived, but died subsequently of the progress of the cancer that was found *post-mortem* at the head of the pancreas.

Keppler's operation was done in July, 1887. The gall-bladder and the ileum were united by direct suture. The patient progressed favorably for a time, but died fourteen months after the operation.

Fritsche, in the year following, established a fistulous opening from the gall-bladder and the jejunum. At the *post-mortem* examination a carcinoma of the size of a walnut was found at the mouth of the common bile-duct. I may here state that this case was identical with my own.

Gaston goes on to say that Socin and Bardenheur each attached the gall-bladder to a loop of small intestine. The case of the latter died in the fourth week, and no fistula was found. It is said the operation was done with the elastic ligature. This latter is a point of considerable value, as the experience of Bardenheur coincides

with mine in the non-establishment of the fistulous opening, though the patient lived long enough to have permitted of the formation of such a fistula.

Robson operated in 1889 on a patient who had been previously subjected to cholecystotomy. The gall-bladder and colon were subsequently incised and united, and a drainage-tube inserted in the wound. After one day bile came out of the drainage-tube mixed with feces. The appearance of bile in the feces is reported to have subsequently been noted.

In 1889 Terrier operated for relief of occlusion of the common duct. A stone was found in the common duct that could not be removed, the gall-bladder was attached to the jejunum, a drainage-tube passed through from the outside of the gall-bladder into the duodenum, and the fundus of the gall-bladder was sutured to the lower angle of the external incision. The drainage-tube passed off with the evacuations nine days after the operation.

Courvoisier next operated, and united the gall-bladder to the colon. The patient did well.

There is another case reported operated on by Helferich. An opening was established between the duodenum and the gall-bladder. The method was by direct suturing. Chavasse, of Birmingham, used Senn's bone plates, and made a communication between the gall-bladder and the colon. At first bile and fecal matter were discharged through the abdominal wound, but the patient ultimately improved. Korte also united the gall-bladder with the duodenum.

At the time of Gaston's report in *The Medical News*, June 11, 1892, there had been seven cases operated upon, with one death, but the death was not attributable to the operation. Among these, one case was operated upon with elastic ligature, and was not successful. I now have to add another.

My time has been so occupied that I have been unable to search through the literature of the past year for any other cases that may have been reported. Taking all these facts into consideration, there can be no doubt that the operation of cholecystenterostomy has come to abide; that it is an important operation that is likely to be performed more frequently in the future than in the past; that it is virtually attended with a very low mortality; and that it has been successful in a large enough number of cases to prove that the operation can be of benefit to men as well as to the lower animals.

TABLE OF CASES OF CHOLECYSTENTEROSTOMY—ROSS.

No.	Name of operator.	Date.	Disease for which done.	Immediate or secondary operation.	Method by which done.	Result.	Portion of intestine united.	Leakage.
1	von Winiwarter,	1880	Obstruction of the common duct.	Six attempts made.	Direct suture.	Fistula established.	Small intestine.	
2	Mownastyriski,	June 14, 1887	Carcinoma of the head of the pancreas.	Immediate.	Direct suture.	Fistula established.	Jejunum.	
3	Kepeller,	July 6, 1887	.....	Immediate.	Wolfler's suture.	Fistula established.	Ileum.	
4	Fritsche,	1888	Carcinoma at the mouth of the bile duct.	Immediate.	Direct suture.	Fistula established.	Jejunum.	
5	Socin,	.....	.....	.....	.....	Fistula established.	Small intestine.	
6	Bardenheur,	.....	.....	.....	Elastic ligature.	Fistula not established.	Small intestine.	
7	Robson,	March 2, 1889	Obstruction of the common duct.	Secondary to cholecystotomy.	Direct suture.	Fistula said to be established.	Colon.	Bile and feces from drainage-tube.
8	Terrier,	July 13, 1889	Impacted gall-stone.	.....	Immediate suture.	Fistula established.	Duodenum.	
9	Courvoisier,	.....	Gall-stone in the common duct.	Secondary to cholecystotomy.	Immediate suture.	Fistula established.	Colon.	
10	Helferich,	Feb. 25, 1892	Calculi in the common duct.	.....	Immediate suture.	Fistula established.	Jejunum.	
11	Chevasse,	1892	Obstruction by gall-stone.	Secondary to cholecystotomy.	Bone plates and immediate sutures.	Fistula established.	.....	Bile and fecal matter.
12	Korte,	.....	.....	.....	.....	.....	Duodenum.	
13	J. F. W. Ross,	Feb. 1893	Malignant growth, size of walnut, obstructing common duct.	Secondary to cholecystotomy.	Elastic ligature.	Fistula not established.	Duodenum.	

Courvoisier gives the following indications for the operation: First, when biliary fistulæ are difficult of removal, whether they be traumatic, ulcerative, or operative; secondly, any permanent obstruction of the common bile duct, except in cases of gall-stones; and, thirdly, in traumatic and ulcerative communications between the common duct and the abdominal wall. In the three questions recited in the early part of this paper, with the answers given, I have expressed my views on the subject.

DISCUSSION ON THE PAPERS OF DRS. MANTON AND ROSS.

Dr. L. H. Laidley, of St. Louis.—Mr. President: I have but a limited experience in anastomotic operations for the relief of obstruction to the common duct. One case occurred in my practice in which the principal symptom was jaundice with cholemia. The tumor was readily felt underneath the thin walls of the abdomen. An operation was done in which union was effected between the duodenum and the gall-bladder, and the parts were united by Brokaw's rings, which are, I think, as good as anything we can use in these cases, and the results are as favorable as by the Abbe rings. It can be done as expeditiously and as safely to the patient as by any other means for uniting these parts. The patient suffered from a considerable amount of hemorrhage. Everything was done as described by the essayists. After uniting the gall-bladder by Brokaw's rings, I made another incision; the sac being quite long I attached it to the abdominal wall the same as I have done in operations for the removal of gall-stones, then united the abdominal wall, sewing it up by suture. The patient continued to suffer from hemorrhage, which was the particular trouble I had. I applied styptics and pressure. In the three cases operated on prior to this one I was able to manipulate the cyst in each case, as the hemorrhage was of little consideration. There was simply a cyst of the gall-bladder in each of these cases. However, in order to determine the cause of the trouble, the gall-bladder being distended so readily, I introduced my index-finger, and passed it up as far as I could to see whether there was occlusion from stone or growth. Hemorrhage was the principal symptom I had to contend with, and on the third day was the cause of the patient's death. The blood came principally from the mucous surface of the sac itself, which I had probably

entered in probing. I do not think it came from the margin of the sac as it was dissected. I shall avoid rough manipulation in such cases hereafter.

Dr. Charles A. L. Reed, of Cincinnati.—The two papers that have been read deserve the fullest possible discussion. They develop subjects which are at best perplexing. We ought certainly to feel grateful to the authors for having presented in such detail and with such completeness the history of cases that are so very instructive. This is the first time that I have had demonstrated to me the existence of these intra-cystic neoplasms. They may be very misleading, and may send us on the hunt for calculi that do not exist.

The question of anastomosis between the gall-bladder and some segment of the intestinal tract is one of great practical interest, and I believe that wherever it is practicable to effect such an anastomosis that it ought to be practised—certainly in all cases in which there is either a very large calculus or a very considerable growth, if the two can be differentiated at this stage of the operation within the common duct. I have given some attention to the practice of anastomosis, not clinically, but experimentally, and I am satisfied it is an operation, as Dr. Ross has stated, that has come to remain.

The method of performing anastomosis is one that must, I think, be selected with reference largely to the case in hand. Given a case of dilated gall-bladder and an accessible duodenum, and anastomosis can be effected in a very few minutes without danger of hemorrhage by Murphy's anastomosis button with perfect safety when proper precautions are taken. I was very much interested in this ingenious device when presented by its inventor, Dr. Murphy, of Chicago, at the last meeting of the Mississippi Valley Medical Association, held in Cincinnati. I have since done two cases of experimental anastomosis. In one I was dissatisfied, as you will discover when I relate it, and the other afforded me great satisfaction. The operation was done upon dogs with the small Murphy button. In the first instance I simply did the ordinary anastomosis quickly and easily without a particle of danger from the margin of the incision. Indeed, the nature of the device itself precludes the possibility of hemorrhage, for the reason that it exercises that pressure upon the terminal vessels that will prevent oozing. I had the dog carefully watched; it rallied from the operation, and went along for a month very nicely, but the button did not pass by the intestinal tract. I then had the dog killed, and the button was in the gall-bladder, and not in the duodenum. The fistula had grown so much smaller than the button itself, and had under-

gone some cicatricial contraction, so that, instead of having a calculus within the bladder to deal with, I had a button.

The next experiment I did a little differently. I adjusted the button in the usual way, attached a small thread to the intestinal half of it, and to that a piece of soft rubber, letting it remain loose in the duodenum. The peristalsis simply effected the necessary traction, so that when the button was liberated it found its way into the intestinal tract and escaped. The operation with the Murphy button is an ideal method of procedure, and I anticipated in this discussion having the privilege of exhibiting the buttons at this meeting. (Here one of the members left the hall, procured two of the Murphy buttons, and Dr. Reed demonstrated the *modus operandi* in anastomotic operations.)

Fig. 1. Fig. 2. Fig. 3.

The Murphy button closed. The Murphy button open.

The question of the pathology of gall-bladder disease is one of interest, and reminds me of two cases which I have had since this Association last met. Both were unfortunately fatal, in which I did not have the gall-bladder to deal with, and it is this feature of the pathology of gall-bladder disease to which I desire to call your attention and invite discussion. In one case, that of a young woman, twenty-four years of age (I intend to report this case in detail on a future occasion), there was a history of having had several attacks of extreme jaundice, with pain in the region of the gall-bladder, occurring at intervals of from one to two months during the previous two years. In that case I found extreme jaundice and cholemia. A superficial incision demonstrated a tendency to hemorrhage, a thing that we always find in extreme cases. I did not find before the operation, nor indeed after, any tumefaction over the gall-bladder. I undertook simply an exploratory incision, and was prompted to operate for local pain and constitutional symptoms. After opening the abdominal cavity in the usual position, *i. e.*, under the free margin of the ribs, and slipping my finger in, I was totally at a loss to find either the ducts or the gall-bladder. Then, on enlarging the incision to admit of inspection, I found, instead of the gall-bladder, a mere diverticulum along the fissure, communicating with the ducts. The woman had had no bile stools for several weeks, and she had no distention of the gall-

bladder. I made a very careful exploration, but could find nothing for which to operate further. I closed the opening, and she died in the course of a few days. There might have been an impaction of the liver itself; there might have been an impaction in the hepatic duct, but I could not discover it.

The next case was one of extreme contamination of the blood, of long standing, that came to me from one of the Gulf States. I did a section in her case and failed to find the gall-bladder. It was not there. I did not even find the usual diverticulum that is noted in some of these cases, and which is nothing more nor less than a contracted or rudimentary gall-bladder. But I did find surrounding the common duct a general agglutination of intestinal and omental structures. By carefully manipulating this mass I could feel a calculus quite as large as the growth in Dr. Manton's specimen, occupying and occluding the common duct. Now, with the calculus in this position, occupying and occluding the common duct, we ought in the ordinary course of events to have had considerable distention of the gall-bladder, but there was nothing of the sort—indeed, there was no gall-bladder. I then inserted a needle and endeavored to disintegrate the growth, but absolutely without effect. I tried the method of crushing, as practised by Tait, with a padded forceps, and it did not avail me, for the reason that the surrounding structures glided over the stone and I could not grasp it in the forceps. To reach that stone I did a duodenostomy—a perfectly easy and simple operation—and found the stone presenting at the orifice of the duct, which was dilated to one-quarter of an inch in diameter. I then made some stellate incisions around the orifice of the dilated duct. From this time on the delivery of the stone was easily effected. It was very accessible. I pressed the stone out into the duodenum and delivered it. The orifice did not communicate with the peritoneal cavity, a point which I took great care to ascertain. I had no difficulty in closing the incision in the intestine by the Czerny-Lembert method. Instead of the interrupted I used the continuous suture of silk, fixed the line of intestinal incision to the line of the abdominal incision, did it quickly, and put my patient to bed in a perfectly satisfactory condition, and yet she never rallied from shock. This was one of the conditions in which it was and is impossible to effect anastomosis between the gall-bladder and intestine, for the very good reason that there was no gall-bladder. It was quite impossible to effect crushing, because the stone was dense and eluded the forceps, and it was found impracticable to break it up by means of the needle, which I endeavored to do, hence the question was, Should I simply back out from this case? I endeav-

ored to do the best I could, but had an unfortunate result. She died in twelve hours after the operation from sustained shock.

We have now had called to our attention the delusive appearance presented at the time of operation by small round tumors in the duct. Let us also remember, in surveying the pathology of the gall-bladder, that one of the anomalies that may confront us is nothing more nor less than absence of the gall-bladder itself.

Dr. Laidley.—I would like to ask if any of the members know of successful cases in the human being operated on by surgeons other than Dr. Murphy in which the Murphy button was used?

Dr. Longyear.—Dr. H. O. Walker, of this city (Detroit), has successfully operated on a patient in which he used the Murphy button.

Dr. Manton (closing the discussion on his part).—I do not know that I have anything in particular to add in connection with the case I reported. Dr. Ross has gone over the literature of the subject pretty thoroughly, and perhaps the only paper which he has not see in that by Dr. Musser, to which I referred, which deals principally with malignant growths of the gall-bladder and the ducts. It has been found that nearly all the primary new growths of the gall-bladder and ducts are of a malignant nature. The common duct is the usual site of the development of these tumors. But three cases out of eighteen were developed in the vicinity of the hepatic duct.

The chief point of interest to me in this class of cases is the diagnosis. From what I have been able to ascertain in the literature of the subject there seems to be no general symptom or condition by which these malignant growths can be diagnosticated. We may have all the conditions present of unmistakable disease of the liver without having any trouble with the ducts or gall-bladder itself, so that unless some symptom or sign is discovered by further investigation in this class of cases it will be exceedingly difficult for the surgeon to know when he *shall* and when he *shall not* operate. We do not get cystic dilatation always; we do sometimes. We do not get pain always, as in the case which I reported the pain was absent. The only symptom we have that is at all reliable is jaundice, and I hardly think any surgeon would have the temerity, unless he had the operative furor, to operate for this one symptom alone.

Dr. Ross (closing the discussion).—I cannot advise the use of the elastic ligature, and I should hesitate before using Murphy's button, for the reason, it seems to me, we are introducing into the intestine a foreign body. Dr. Laidley has just told me of two fatal cases that

occurred in St. Louis in which the Murphy button was used. If I should be fortunate enough to have a case of this kind in the future I intend first of all to open the gall-bladder, drain, and get rid of the condition of cholemia; second, to make a secondary operation and produce anastomosis by direct suture. I believe this will answer every purpose. We then have the field of operation under control; the operation takes but little longer. Dr. Reed states that the element of time is important in cases that are profoundly cholemic. I admit that. The wisest procedure is to rid the patient of the cholemia by establishing an external fistula for some weeks, and after jaundice has disappeared to do a secondary operation.

Dr. Reed's cases are very interesting. It is a well-known fact that there are animals that have no gall-bladder, and I think there is still a field for research in connection with any anomalous peculiarities that may arise pertaining to the gall-bladder. I am not familiar enough with the literature of the subject to say much about it.

I was interested in the case related by Dr. Manton, the patient having died of hemorrhage, so that the cause of death was identical with that in my own case. I felt myself that there was oozing from the gall-bladder, but after packing it with iodoform gauze and finding that the hemorrhage still continued, I concluded that the hemorrhage must come from farther up, and I was still at a loss to account for it. The lesson we have been taught today is to allow as little manipulation subsequent to operation as possible.

WHAT ARE THE INDICATIONS FOR ABDOMINAL SECTION IN INTRA-PELVIC HEMORRHAGE?

By M. ROSENWASSER, M.D.,
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It is beyond the scope of this paper to prove the existence of extra-peritoneal hematocele. If the leaflets of the peritoneum forming the broad ligament develop into strong membranes in the course of a pregnancy and during the growth of fibroid and intra-ligamentary tumors, there is no reason why they should fail to develop thickness and strength with the chronic peritonitis consequent upon circumscribed hemorrhage. The exceptional existence of intra-ligamentary hemorrhage is based upon observations sufficiently authentic to place it beyond dispute. Notwithstanding this fact, however, recent experience in pelvic surgery has demonstrated that a clinical differentiation between circumscribed intra-peritoneal and extra-peritoneal hemorrhage cannot be maintained. We can, therefore, no longer consistently abide by the misnomers intra- and extra-peritoneal hematocele, but must seek other terms more in accordance with clinical experience.

Conceding that nearly all intra-pelvic hemorrhages are intra-peritoneal, they are found to vary exceedingly in degree, and hence in their prognostic significance. While *free hemorrhage* almost inevitably leads to a fatal termination when left unchecked, *circumscribed*, or *limited hemorrhage*, whether intra- or extra-peritoneal, is in itself *never directly* fatal. Recent writers commit the grave error of attributing to the limited hemorrhage the same serious import due to the most violent free hemorrhage. Concerning the latter there can be no controversy among abdominal surgeons. Parry says: "When one is called to a case of this kind it is his duty to look upon his unhappy patient as inevitably doomed to die, unless he can by some active measures wrest her from the grave already yawning before her." Today these active measures are well known and universally applied.

What shall be done with limited or circumscribed hemorrhage? It seems almost sacrilegious to resurrect a subject deemed by common consent to have been definitely buried. The very name, "extra-uterine," is to the operator of today the signal to clear the deck for immediate action. What then may be the fate of the inexperienced mariner who steers counter to this popular current? I do not expect to enlighten this Association, but hope to provoke a discussion which may prove instructive alike to those directly interested as to the profession in general.

Pelvic hemorrhage may be circumscribed either because the lesion producing it is insignificant, or because the blood is poured into a preformed circumscribed space, or because of the formation of blood-clot with subsequent agglutination of omentum and intestines. Whether the origin of such hemorrhage be a trauma, a ruptured vein, ruptured tubal pregnancy, or tubal abortion, the absorption of the blood-clot alone, or together with the product of early gestation, is not only a possibility, but must be a matter of frequent occurrence, more especially as these cases are quite common, though often unrecognized. In the pelvis, as in other parts of the body, physiological rest will largely assist in the disappearance of the blood extravasation. Only in the event of the infection of the mass, or of the continued growth of the fetus, or of mechanical interference of function by pressure, or in the rare event of secondary rupture will the question of surgical relief be involved.

Assuming that these teachings of Tait, published in his late book on *Diseases of Women and Abdominal Surgery*, have already outlived their application, and that the more radical views of today are correct, namely, that all pelvic hemorrhages are intra-peritoneal, that they are all primarily due to ruptured tubal pregnancy, and that the symptoms of extra-peritoneal hematocele, so-called, and of ruptured tubal pregnancy are identical, and that a differential diagnosis between them cannot be made—conceding all these postulates for the sake of argument, the question suggests itself whether we are prepared to assume the logical consequences and advise operation in all cases, following the lead of our distinguished Fellow, my friend Dr. Joseph Price, who says: "The argument that many cases get well of themselves, in the presence of the multitude of disasters and in the light of the horror of these very recoveries, is so puerile that the surgeon of practical and positive bent cannot

regard them with complacency, nor consider that those who advance them have authority from which to speak more positive than the vaporings of fancy."

The sixteen cases of circumscribed pelvic hemorrhage herewith submitted in tabulated form represent my limited experience in the past four years. They are consecutive, not selected, except that doubtful cases have been excluded, and they occurred in my private and consultation practice, remaining under observation to complete termination. The symptoms, more or less common to all, were sudden onset after one or two missed periods, or about or during menstruation; severe pelvic or abdominal colicky or bearing-down pain with marked rectal or occasional vesicle tenesmus; in most cases intermittent, long-continued metrorrhagia, with early marked anemia; generally a febrile condition, with fair pulse; rapid development of tumor, unilateral, or filling the entire pelvis and rising to the level of the umbilicus; the uterus correspondingly displaced, generally forward, in some cases to the opposite side or toward the sacrum. Nine, or more than one-half of these patients, made complete recoveries after prolonged rest in bed, varying from four weeks to six months, and have remained well. The only trace left to indicate their former trouble is a slight, painless thickening in the floor of the pelvis, or a limited mobility of the uterus. Of the remaining seven, four were relieved by abdominal section; one was removed from observation before a decision had been reached; one was seen when so thoroughly starved and septic that section did not change the downward course, ending in death, and one refused operation and passed from my care. She has now been an invalid for over two years, passing bones per rectum, and is at present again in the hospital. Excepting my first case, which had been diagnosticated as pelvic abscess, but proved to be circumscribed hemorrhage, operation verified my previous diagnosis in every instance. The indications for operation were: suppuration, three (of whom one refused operation); obstruction of bowel by pressure, two; continued growth of fetus, one (removed from hospital while under observation), and invalidism due to non-absorption, one. The latter I operated, yielding to the patient's entreaties; she wished to get well quickly, and would not try absolute rest. She made a rapid recovery, but now has a ventral hernia. I have no doubt she would have recovered in from six to eight weeks without operation.

Excepting the patient operated at term and the one who refused operation, there was no fetus found in any case, merely decomposing blood, blood-clot, or pus and blood. The two deaths are in nowise ascribable to the operations, as the patients were practically moribund and bound to die—the operations having been undertaken as forlorn hopes.

An analysis of this table will show that there was a definite indication for operation in six cases, and that ten had no need of surgical aid—a proportion altogether too great to be brushed aside with the dictum that such occur only "now and anon." If pelvic hemorrhages are all due to tubes that have ruptured, the safe, non-operative recovery of the large majority justifies the attempt to separate those requiring operative interference from those that can be left alone, and warrants the demand for a modification of the rule to operate in all cases. While the terrible emergency of free hemorrhage must be met without unnecessary delay, operation in circumscribed hemorrhage should be delayed until rendered imperative by definite indications. The symptoms as a rule develop gradually, and are sufficiently characteristic to facilitate early and easy diagnosis.

Confining the discussion to circumscribed hemorrhage as it may occur during the first three months of ectopic pregnancy, the advantages claimed for early operation are:

1. The absolute control of hemorrhage and the prevention of its recurrence;

2. The removal of *débris*, consisting of fetus, placenta, and blood-clot;

3. The removal of the ruptured tube or diseased appendages;

4. The safe and speedy recovery of the patient.

The abdomen having once been opened, for whatever cause, the enumerated advantages become the practical results of such opening. But we ask, are the indications always of such a nature as to call for abdominal section to obtain ideal results?

1. THE ABSOLUTE CONTROL OF HEMORRHAGE.

In fulminant rupture there is free hemorrhage, for which there is but one indication—to secure the bleeding vessel. The fact that a hemorrhage is circumscribed implies that it has been, at least

temporarily, arrested; its further development requires careful watching. Should the tumor continue increasing, or the symptoms of seriously recurrent bleeding be manifest, opening the abdomen is the proper procedure. Should, however, the tumor remain unchanged, or should it be shrinking, the hemorrhage and further growth of fetus have ceased; then the danger of delay is no greater than is the risk incurred in operation. In other words, sudden death from secondary rupture and premature death from uncalled-for operation are equally rare. To advocate abdominal section in every case of circumscribed pelvic hemorrhage, because an occasional secondary rupture may prove fatal, would be as logical as to insist on tamponing every uterus after childbirth because of an occasional fatal post-partum hemorrhage.

2. THE REMOVAL OF DÉBRIS.

Inasmuch as Nature can take care of 60 per cent. or more (Tait claims 95 per cent.) of the fetus, placenta, and blood-clot without leaving a vestige for future mischief, the surgeon ought to interfere in those cases only in which Nature has proved herself insufficient. The fact is, only the reduced minority, who do not get well, are brought to the notice of the specialist. The practitioner, through whose hands passes the large majority, both recognized and unrecognized, sees many of his cases recover, though their very recovery prevents their identification. The surgeon who operates in every instance is in a position to verify the diagnosis on the table, or at the autopsy; but, on the other hand, cuts off his opportunity for a thorough acquaintance with the natural history of the disease. He must needs imagine that there is but one royal road to recovery. When done at all, our surgery should be clean; but when unnecessary, the most ideal surgery must bow in adoration before Nature's infinitely superior methods of repair.

3. THE REMOVAL OF THE RUPTURED TUBE.

The danger, if any, of allowing a ruptured tube to remain in the pelvis is much exaggerated. Patients recovering without operation manifest no symptoms referable to subsequent tubal disease. In operating for so-called hematocele of the broad ligament by abdominal section, the appendages are seldom seen, being usually buried

by universal adhesions; they are therefore often left undisturbed, the patient making a good recovery. If the operation be by vaginal incision, the tubes must of necessity remain *terra incognita*. In the only post-mortem it has been my good fortune to make I found the ruptured tube lacquered over, inside and out, by plastic lymph. The tube had thus lost both its anatomical and physiological characteristics. Should there be diseased appendages in the mass they would remain after absorption of the blood-clot, and would then be subject to the usual rules of treatment. There was no occasion to disturb the appendages in the sixteen cases reported. Of the thirteen fully recovered, not one has hitherto had any trouble.

4. THE SAFE AND SPEEDY RECOVERY OF THE PATIENT.

"For a patient to be confined to bed for weeks or months, and afterward to lead the life of a chronic invalid, is a reproach to our art, when by a prompt operation the tube can be removed, hemorrhage arrested, and a speedy convalescence assured." If my experience coincided with the above quotation from Bland Sutton, I would say Amen! Those of my patients treated by rest are not chronic invalids, but enjoy excellent health. Those who were marked out for chronic invalidism were urged to submit to operation in accordance with definite indications. We cannot always promise inquisitive patients a safe recovery after operation, nor can we positively assure them that, even if life be saved, accidents will not happen or complications may not arise. Dealing honestly with them we must confess that 5 per cent. will die; 10 per cent. will have ventral hernia, and occasionally one will have a fecal fistula or painful intestinal adhesions. I am confident only a very select few of the 60 per cent. or more who can recover by rest will, after such confession, prefer the risks of immediate operation to those of *vigilant delay*. With my friend, Dr. Hoffman, "I take it that the only just method of procedure is to treat each patient as we would have her treated if she were in our immediate family." To bring this argument home: if any one dear to me were to have a circumscribed pelvic hemorrhage, I care not from what source, I would place her within ready reach of the surgeon, but would stay that surgeon's hand so long as an afebrile condition, good pulse, and flat abdomen reassured me that my patient was safe.

To my mind the rules formulated by the distinguished pioneers in this field of surgery border on the dogmatic; they are too radical. The pendulum has swung beyond the limits of discretion. To practice the science of surgery one must not only follow the rules, but recognize the exceptions. In the present instance the exceptions are implied in the following

CONCLUSIONS:

1. Intra-pelvic hemorrhage may be *free* into the peritoneal cavity, or primarily or secondarily *circumscribed* by true or false membranes.

2. Though nearly always due to ruptured ectopic pregnancy, the same surgical principles underlying the treatment of other similar hemorrhages are applicable in intra-pelvic hemorrhage.

3. Such treatment must therefore vary according to the conditions dependent primarily on the hemorrhage, and secondarily on the original cause of the hemorrhage; hence

4. To prevent *free* intra-pelvic hemorrhage abdominal section is indicated in all cases of presumably recognized unruptured tubal pregnancy, either as prophylactic, or for the purpose of removing pathological conditions not otherwise curable.

5. In all cases of *free*, intra-pelvic hemorrhage, from whatever cause, early or immediate section is the only safe means of averting a fatal termination.

6. In *circumscribed*, intra-pelvic hemorrhage section is indicated for removal of increasing blood-clot and *débris*, whether due to recurrent bleeding or continued growth of fetus.

7. In *circumscribed*, intra-pelvic hemorrhage section is necessary whenever the symptoms indicate decomposition of the blood-clot. Lastly,

8. Section is also indicated whenever the pressure of the circumscribed blood-mass produces obstruction of the bowel.

Cases of Circumscribed Pelvic Hemorrhage.

No.	Medical attendant.	Age	No. of children.	Last child.	Disease continued from	Disturbance of menstruation.	Size of tumor.	Indication for operation.	Operation.	Duration of disease.	Result.	Elsewhere reported.	Remarks.
1	M. R.	36	None	...	March 15, to June 22, 1889	Attack sudden during menstruation; subsequent intermittent hemorrhage.	Fills pelvis, reaching umbilicus.	Obstruction of bowels.	May 14, 1889	Previous to operation. 8 weeks.	Recovery.	Annals of Gyn., Sept., 1889.	Discharged 5 weeks after operation; no fetus found; continues in good health.
2	Dr. F. J. Weed, Cleveland, O.	32	None	...	June 22, to Oct. 19, 1889	Came on suddenly one week before menstruation; no disturbance.	Within 2″ of umbilicus.	None.	None.	4 mos.	Recovery.	.....	Advised against operation; patient already in hospital for that purpose; enjoyed excellent health.
3	M. R.	26	6	16 mo.	Nov. 7, 1889, to Jan. 1, 1890	Attack just after menstruation was due; menstruation delayed 18 days, followed by hemorrhage for 10 days.	Of large orange in left side.	None.	None.	7 weeks.	Recovery.	.....	In good health since.
4	M. R.	25	5	5 mo.	Jan. 17, to Mar. 1, 1890	Attack sudden in inter-menstrual period; irregular hemorrhage for 17 days.	Of lemon in left side.	None.	None.	6 weeks.	Recovery.	.....	In good health since.
5	M. R.	27	2	18 mo.	Feb. 1, to Apr. 23, 1890	Missed for six weeks, followed by flow of three days; attack sudden.	Near umbilicus.	Suppuration.	Mar. 27, 1890	Previous to operation. 8 weeks.	Recovery.	Clev. Med. Gaz., Sept., 1890.	Discharged 4 weeks after operation; no fetus found; health good.
6	Dr. W. C. Bunce, Oberlin, O.	27	Twins	8 yrs.	Dec. 1, to May 10, 1890	Attack sudden; irregular hemorrhages for six weeks.	2″ above symphysis in right side.	Chronic invalid; had never rested, demanded operation.	Apr. 11, 1890	Previous to operation. 4 mos.	Recovery.	Clev. Med. Gaz., Sept., 1890.	Discharged 4 weeks after operation; no fetus found; now has ventral hernia; health good.
7	M. R.	32	3	8 yrs.	Aug. 16, to Nov. 27, 1890	Attack sudden, during menstruation; hemorrhage intermittent for a month.	To right iliac fossa.	None.	None.	3½ mos.	Recovery.	....	In good health since.
8	Dr. A. Peskind, Cleveland, O.	36	3	11 yrs.	Oct. 20, 1890, to Feb., 1891	Missed two weeks; subsequent flow lasting ten weeks; attack sudden.	3″ above symphysis on right side.	None.	None.	About 3 mos.	Recovery.	Clev. Med. Gaz., March, 1891.	Decidual membrane thrown off on fifth day of hemorrhage; enjoying good health.

9	Dr. F. L. Thompson Cleveland, O.	29	...	...	Quiet from Dec. 31, 1890 to Feb. 1, 1891; about subsequ'ntly though not well.	Attack sudden at time menstruation was due; scant flow two previous menstruations; none at this time.	Above pelvic inlet on left.	Further observation would have shown continued growth of fetus.	June 25, 1891	6 mos.	Death from sepsis after missed labor.	Clev. Med. Gaz., Jan., 1893.	Was removed from hospital without consultation and not seen again until time of labor.
10	M. R.	48	10	5 yrs.	March 10, to Apr. 20, 1891	Attack simultaneous with suddenly checked severe uterine flooding.	Filling left side of pelvic cavity.	None.	None.	5 weeks.	Recovery.	.....	Excepting fractured leg a year ago, in good health since.
11	Dr. J. Friedman, Cleveland, O.	26	1	7 yrs.	Jan. 1891, to present.	Passed one period, then merely show for a month; severe flow for one week.	Within 2″ of umbilicus.	Suppuration.	Would not consent.	Now over 2 years.	Still sick.	.....	Abscess broke through rectum; still passing bones by fistula
12	Dr. N. Weidenthal Cleveland, O.	30	None	...	Oct. 29, 1891 to March, 1892	Attack sudden at end of menstruation during which passed clots; flow intermitting four months.	Within 1″ of umbilicus.	None.	None.	4 mos.	Recovery.	.....	Now in better health than previous to disease.
13	City Hospital,	28	1	10 yrs.	Dec. 7, 1891 to Sept. 1, 1892	Hemorrhage lasting two weeks at a time.	Level of right iliac fossa.	Suppuration.	July 7, 1892	7 mos. previous to operation.	Recovery.	.....	Had been sick six months before coming under my care; discharged two months after operation; no fetus.
14	Dr. W. H. Rogers, Cleveland, O.	29	1	5 yrs.	July 7, 1892 to August 7	Attack sudden; missed seven weeks; subsequent flow two mos.	Above pelvic inlet.	Obstruction of bowels.	Aug. 7, 1892	4 weeks.	Death from continued sepsis.	Clev. Med. Gaz., May, 1893.	Had been vomiting coffee ground material a week before operation; no fetus, but ruptured tube.
15	Dr. J. Friedman,	28	4	18 mo.	Sept. 1, 1892 to Feb. 1893	Attack sudden four weeks after weaning baby; intermitting flow for two months.	Within 2″ of umbilicus.	None.	None.	5½ mos.	Recovery.	.....	When sick 3 months advised operation, which was refused; is now in better health than for years past.
16	M. R.	46	3	11 yrs.	Oct. 20 to Dec. 10, 1892	Attack sudden during menstruation; menstruation then delayed two months.	Level of right iliac fossa.	None.	None.	2 mos.	Recovery.	.....	Now in good health, doing her usual work.

DISCUSSION.

Dr. James F. W. Ross, of Toronto.—Mr. President: I was very much interested in the paper. The subject is an important one, and has been ably handled by the writer. There is no doubt that there is room for considerable thought in this connection. I disagree in several points with the writer, because I believe that the diagnosis of intra-pelvic hemorrhage due to ectopic gestation, and the diagnosis of intra-pelvic hemorrhage from other causes are frequently made. From the writings of authors in the last ten years we have been able to gather a great deal of material in connection with this subject. Yesterday we had an admirable paper by Dr. Peck, in which he described symptoms, and in which the diagnosis was made upon the symptoms. His cases were undoubtedly ones of ectopic gestation, and I think as such can be distinguished from hemorrhage due to other causes. My experience of hemorrhage outside of ectopic gestation is limited to one case.

A young woman was swinging at a picnic, and was at a considerable height from the ground, when the swing gave way and precipitated her violently to the earth. She immediately experienced faintness, and had a feeling as if she wanted to evacuate her bowels. She was carried into the woods near by, and attempted to move her bowels. The desire was present, but she was unable to do so. This case was treated by my father for some length of time. She had symptoms of intestinal obstruction, and there was a mass felt in the pelvis. We watched her case carefully; finally, her temperature began to rise. I punctured through the vagina, introduced the actual cautery, and evacuated a large quantity of blood-clots and pus, washed her out, kept her as aseptic as possible, and she made a complete recovery. She has had one or two children since, and has been in perfect health.

This case had no symptoms to lead one to suppose that she was suffering from ectopic gestation. In her case the hemorrhage was due to traumatism. When we have a sudden onset of the symptoms in a case in which ectopic gestation is suspected, I believe abdominal section to be the safer method of procedure. If the patient was my own relative I should ask the surgeon to operate. We can never tell when these fatal hemorrhages are going to occur and when the patient is going beyond the reach of surgical skill.

As to early operation, I disagree with the author on that point. There are few cases of ectopic gestation operated on early. In the

cases reported by Dr. Peck yesterday, every one of them waited for some time. When the doctor is called and states that ectopic gestation is present and the patient refuses operation, there is always delay, and as a consequence cases are not operated on until symptoms have become plain by a recurrence of the hemorrhage. There is thus seldom any danger of early operation.

I have had a peculiar experience in leaving the sac behind. I operated on one case of extra-uterine pregnancy with rupture into the broad ligament. I was unable to enucleate the sac, and left it there. I drained. There was separation of the placenta left behind for four or five months. She bled through the drainage-tube so long that I despaired of her getting well. Even when the fetus is dead the placenta may remain active.

I hope this paper will not lead surgeons to stay their hands. We already have a good deal of opposition in this matter. I, however, agree with Dr. Rosenwasser, that some of these cases may regain perfect health, and complete absorption will take place without operation.

Dr. Charles A. L. Reed, of Cincinnati.—The drift of the paper seems to me to be favorable to the view that, first, all cases of intra-pelvic hemorrhage are practically intra-abdominal; and next, that they depend for their occurrence practically upon extra-uterine gestation. My attention was diverted from the ideas of the paper, and I failed to grasp perhaps all of the points brought out by the essayist. If I fail to interpret Dr. Rosenwasser's remarks, he will correct me.

One of my early cases in gynecological practice was that of a woman who gave a history of illness for five months immediately following the birth of her child. I found an intra-pelvic tumor, and by careful study of the history of the case I determined it was one of extra-peritoneal hematocele, having its origin probably in some traumatism incidental to delivery. I waited for absorption, and the tumor increased in size to an extent much greater than it would today in my hands. I waited much longer than I would now wait, until finally I made an incision through the vault of the vagina and delivered nine pints of clot. This patient made a recovery. Irrigation was practised very systematically.

Last week I was called by my friend Dr. Skinner, of Hamilton, to see a patient presenting a similar history. She was a young woman who had been delivered three weeks previously of a child. She complained of pelvic pain, was unable to lie down, and the pelvic diaphragm was distended. There was downward distention of the diaphragm to such an extent as to obliterate the cervix, and in that

case I felt that we ought to proceed cautiously. I did not believe the patient had any intra-abdominal accumulation, and I used an aspirating-needle through the vault of the vagina and removed two pints of thick, tarry blood. I did not make an incision in this case because it was recent. I have seen several cases between the one I first alluded to and this one, and am convinced that it is a mistake to remove too early the clot unless it is done by abdominal section and ligature is made of the appendages. The hope of hemostasis in these cases is for the formation of a hemorrhagic infarct. While in this case I withdrew the blood, and with the result that I felt would follow, there was reaccumulation to a degree much greater than that which previously occurred; so much so, that after five days I did what I ought to have done in the first place—namely, I made a ligature of the appendages from within, and found the tube and ovary healthy. I simply made a deep ligature of the broad ligament, leaving the appendages undisturbed, evacuated the mass from the vault of the vagina, irrigated it carefully, and closed the abdomen entirely. The result was satisfactory.

Dr. George F. Hulbert, of St. Louis.—Unfortunately I only heard the closing part of Dr. Rosenwasser's paper. From the title, I should judge that it is a consideration of intra-pelvic hemorrhage, regardless of what may be the particular cause. The feeling is, I think generally, that a large majority of the cases is due to ectopic gestation. As far as this cause is concerned, in the presence of intra-pelvic hemorrhage, there is only one condition where there is any excuse for delay in operating, and that is where rupture has taken place into the broad ligament. I have no doubt there are cases where the rupture occurs intra-peritoneally; that possibly by some unusual fortuitous circumstance the patient may get well; where fortunately the rent is through a small portion, or may entirely escape the placental tissue that is developed, and in the rent there may also escape the product of gestation, with death of the fetus, in which case we simply have remaining the placental tissue and the fetus to be taken care of. Nature possibly under these circumstances may succeed in doing it without much, if any, long-continued disturbance of the patient. I have no doubt also that in those cases where the rupture is into the broad ligament, the mechanical conditions presented there are capable of and do in many instances promote ultimate and perfect recovery. But I dare say there are none of us but feel that these are exceedingly exceptional and rare conditions. If we are going to lay down a rule in regard to the management of intra-pelvic hemorrhage

due to this particular cause, and if experience teaches us anything, the rule should be, where we have these conditions, that the only safe procedure is to get rid of the cause of the trouble, and for that reason, where I feel I have an ectopic gestation, while I am perfectly willing to delay temporarily, I always urge not only the advisability of an operation, but prefer, as far as I am personally concerned, to do it at once. I impress upon my patient from the beginning what she has to meet in the future, and prepare her for that ordeal. I feel that I never know when the necessity is coming for the radical measure that only too frequently we have to resort to.

As far as those conditions are concerned which develop intra-pelvic hemorrhage that are not due to ectopic gestation, there is room for disagreement as to the proper procedure. While I feel sometimes I can make a diagnosis in those cases, I also feel that I am very liable to be mistaken. When in those conditions there seems to be an element of gravity from general appearances which come to us simply as intuitive perceptions in the observance of particular and individual cases, and I feel there is grave doubt as to whether I am correct, I believe the only proper thing for me to do is to inform the patient of the situation, and the only way of knowing the exact condition of affairs is to operate and find out the cause. When we stop to consider that even in many cases of what may be termed hematocele not due to ectopic gestation, and even in those conditions that are due to ectopic gestation, the patients unfortunately have a history in the majority of cases of some pelvic trouble, the difficulties of diagnosis are readily appreciated.

The most difficult conditions under which I have been called upon to determine the exact state of affairs have been where this pathological picture has been particularly marked, and it recalls to my mind a patient that came under my care about six months ago who had had a long-continued pathological condition of the appendages. She had been treated for some time. She came to me for a chronic condition, and after treatment had been instituted for one or two months she missed a menstrual period. Shortly after the missing of the menstrual period there began to be developed the morning sickness, fulness and irritability of the nipples, and some sense of distention at the site of the pathological condition, which was on the left side. Very naturally I feared she was pregnant, and I was placed in the condition of a man who knew or felt satisfied as to the danger, and was called upon to decide as to what was best to be done under the circumstances. Here were the sympathetic phenomena of gestation with a diseased condition of the uterus that, to my mind, was not compatible with preg-

nancy. Because her condition was not sufficiently clear, I felt I was justified in delaying matters and seeing what the future had in store for her. About two weeks after the development of these phenomena she had a violent flooding spell, without any relief to the nausea or irritability of the breasts. Right here was a differential point. If the hemorrhage from the uterus had been followed by cessation of the reflex phenomena, I might have been strengthened in my belief as to the possibility of there being a lost pregnancy; but with the persistency of them I felt still further satisfied that she must necessarily be flowing from an extra-uterine gestation. Still, with all that, I delayed informing her as to the condition I suspected, and the case ran along with more or less persistent discharge of blood for two weeks longer. She was finally taken with another flooding spell. During this time it was found by repeated examinations that there was a steady, gradual enlargement of the mass on the left side. This hemorrhage was followed by cessation and relief of all the phenomena developed at the time she missed the menstrual period; in short, at about the fifth week of what would have been a gestation, hemorrhage relieved the condition. I have simply detailed this case to illustrate this point: where we have a marked pathological condition present, long continued, in which we have tissue changes, the difficulties presented in diagnosticating the condition justify us in delay; nevertheless, we should be ready at all times to resort to radical measures if they are needed. Here was a picture that would have made most of us feel the probability of extra-uterine gestation. I fortunately delayed matters, and the future demonstrated there was no gestation, but what the condition was I do not know. The probability is that the added hyperemia was sufficient to develop reflex phenomena in the absence of gestation.

If we are going to establish rules in regard to what we shall do under these circumstances, to my mind it resolves itself into the question of diagnosis. If we are standing alone and assuming the responsibility of the case, as many of us may have to do, the safe rule is to know positively what we have to contend with and resort to that measure which simply gives us that knowledge. We must concede that intra-pelvic hemorrhage is not always due to ectopic gestation. We must prepare ourselves to make correct diagnoses in these cases, and we must concede that there is at least room for rational judgment and common sense in the management of them, but to attempt to lay down rules is not our province. None of us are justified, except in a general way, in attempting to establish a rule of procedure in cases of intra-pelvic hemorrhage.

Dr. J. Henry Carstens, of Detroit.—It seems to me we all agree and practise what Dr. Rosenwasser advocates in cases of intra-pelvic hemorrhage where the symptoms subside and where the patient gets along without any serious further trouble. We let these cases alone. We all do it. We do not operate on cases of that kind. There is no need of it. Then there are cases where the diagnosis of extra-uterine pregnancy is clear, the danger great, perhaps a second attack, and where we ought to operate. We do operate. Again, there are a number of cases that are doubtful, and we do not know whether it is best to operate or not. These are the cases that try men's souls. The question is, What shall we do? Shall we do what Dr. Rosenwasser seems inclined to do—namely, let them alone and wait, or shall we cut down and remove the pathological condition if it is there? I must say that I have not been so fortunate in some of my cases as have others. I have seen quite a number of cases that have died; consequently, in those cases where I have doubt as to the patient getting well, I think it is better to operate, and, as a rule, I think it is not a very dangerous operation. We all may not have the brilliant results of Price and others, but we should strive to attain such results.

I am glad to know that the general practitioners of Ohio have been educated to recognize the seriousness of pelvic trouble and the necessity of calling in an abdominal surgeon and of having him watch the case with them. I think it is bad practice to resist operative interference and inferentially say there is not much danger, that a great many of the cases will get well, because it will induce the easy-going general practitioner to say that he can take care of these cases himself. He will say, "Let me watch the case." He watches it for two weeks, and then calls in an abdominal surgeon when it is too late. For that reason I am opposed to the acceptance of any such doctrine. I perfectly agree that in those cases where there are no bad symptoms we should let them alone. A man must be an idiot to operate on such cases; but in doubtful cases we should give patients the benefit of an operation, and I recommend it. We know from our experience that if we take one hundred such cases and operate on them early we will get more immediate recoveries than if we take one hundred cases, let them alone for a while, and then operate on them at a later stage.

Dr. John C. Sexton, of Rushville, Ind.—The paper read by Dr. Rosenwasser has interested me very much. It is an excellent one, but I believe he is treading on dangerous ground. I believe he is directing us toward very dangerous procedures. I think if anyone will take his tabulated sheets of results and note carefully the nine cases in which there was no operation, he will feel that those cases would

have done better under operation than without it, although every one of them recovered. After a sudden disturbance of menstruation; after a quickly forming painful tumor in either right or left broad ligament; after a sudden accident, which may or may not be accompanied with a history of ectopic gestation, I do not think it is right to stand over a patient for a length of time extending, as in the nine cases reported, all the way from five weeks to six and one-half months and watch them—for what? To give them a chance to recover. You watch them for what? Dangerous signs. What are the dangerous signs? They are signs of suppuration.

I quite agree with some of the previous speakers who think this practice is questionable; but I believe these cases in the hands of a surgeon of the ability of Dr. Rosenwasser would have had a better chance for recovery with early operation, and that he then would not have taken the risk that he did. One case refused operation, but it was through no fault of his. She has since been sick for two years. She has had suppuration and a discharge of bones by fistula or through the rectum. That case certainly would have done better if Dr. Rosenwasser had operated. It was undoubtedly a case of extra-uterine pregnancy. Other cases might have gone on in the same way. The abdominal surgeon does not know, after a mass is thrown out in the abdominal cavity or in the broad ligament, when it is going to break down and when it is not. If it breaks down the symptoms may be good or bad. Early exploration to see what is there, to drain and to relieve it, would be better practice. I am afraid we have not arrived at that degree of scientific diagnostic acumen to enable us to differentiate the cases into the operative and non-operative; and the anxiety that any surgeon would feel with cases of the kind reported on his hands from five weeks to three or four months is certainly very great, very trying. It is hard to talk against success, but I believe the author would have done better if he had operated on every one of his cases.

Dr. Rosenwasser (closing the discussion).—It will hardly be necessary to answer my critics separately. In the short time allotted for thought and reflection, the drift of a paper is easily misinterpreted. The Fellows have certainly misunderstood my position. The conclusions I have arrived at may not be sweeping enough for some, but as far as they go they can be indorsed by all. I have attempted to vindicate some exceptions to rules universally recognized. I took my text from what Dr. Price has said and written on the subject.

We should distinguish the operable from the non-operable cases, but

this is not always an easy matter. I simply protested against operative interference in *every* case of intra-pelvic hemorrhage. I take as radical a position as any of you with reference to intra-pelvic hemorrhage which may be free into the peritoneal cavity, and I am willing to operate as early as anyone. I am willing to operate in any case in which I recognize recurrent hemorrhage, and to operate in any case in which there is suspected extra-uterine pregnancy, not yet ruptured, in order to avoid free intra-peritoneal hemorrhage. I wish to be placed on record as advocating surgical interference within certain limits, and I maintain that to prevent free intra-pelvic hemorrhage, abdominal section is indicated in all cases of presumably recognized unruptured tubal pregnancy, either as a prophylactic, or for the purpose of removing pathological conditions not otherwise curable. Where we have a rise of temperature, an increase in the pulse-rate, together with a warning that the tumor or fetus, whatever it may be, is growing, I would urge operation at once. I do not counsel delay in such cases, but urge the patient or her friends to call the surgeon as early as possible. When I spoke of delay I meant *vigilant* delay—delay under careful, intelligent supervision in a hospital or at the home of the patient. Should the patient reside at a distance, or should the attendant be unreliable, I surely would prefer operation to delay, as the better choice between two evils. The instances of dangerous delay cited by Drs. Ross and Reed do not apply, as they were justifiable indications for operation. The fear of prolonged mental strain entertained by Dr. Sexton, as also his opinion on final results, are purely theoretical. Close watching for a week or two suffices in most cases to decide the course to be pursued. The worry is then ended, either by gradual convalescence or by operation for proper indication. In my paper I quoted gentlemen who are recognized by the Fellows of this Association as authorities upon the subject under discussion—Tait and Price. Let me read a few extracts from the writings of Tait and Price:

Price (*American Journal of Obstetrics* for December, 1892, p. 875, on "Tubal Pregnancy") says: "Mr. Tait's phenomenal experience and success entitle him to speak with authority."

Tait (*Diseases of Women and Abdominal Surgery*, p. 460) says: "The diagnosis of tubal pregnancy *at the time of rupture* may be made with certainty seven times out of eight, and may be guessed at in the eighth instance." (*Italics* mine.)

Page 469: "An intra-peritoneal hemorrhage, *unlimited* in *quantity* or by *membrane* has *never* yet been felt by me as *a defined tumor* above the brim, and I have now had a large experience of such cases in

which the diagnosis was confirmed by operation or post-mortem." (*Italics* mine.)

Page 460: "The intra-peritoneal ruptures seem to be almost uniformly fatal, whilst the extra-peritoneal hematoceles, whether arising from tubal pregnancies or not, should certainly be left to take their own course unless they give signs that they are suppurating." (Tait calls all cases of free hemorrhage intra-peritoneal.)

Page 466: "I have seen dozens of cases of broad ligament hematocele, and have never met with a fatal one. I have seen nearly eighty cases of intra-peritoneal hematocele, all resulting in death save those (with two exceptions) in which abdominal section was performed for the purpose of obviating death."

Page 472: "I operated upon thirty-nine cases and succeeded in saving thirty-seven of them—a very striking contrast to the old plan of letting them alone to die." (These were cases of free hemorrhage.)

Page 469: "Cases of effusion of blood into the broad ligament by sudden arrest, or at least associated with sudden arrest, of menstruation, are very common, and I am sure that large numbers of these occur without the patients thinking it worth while to ask for medical assistance, and they get well without it. It is, as I have said, a condition probably *almost free from primary mortality* and has only a *remote secondary mortality.*" (*Italics* mine.)

Page 470: "But I feel sure that the great majority of these cases (intra-ligamentous tubal rupture) end then and there by the natural cure as mere extra-peritoneal hematocele, the ovum dies and everything is absorbed. I am quite sure that I have watched several cases of this kind. The conclusions, therefore, are that, save under three sets of circumstances, extra-peritoneal hematocele is an accident *perfectly free from danger.*" (*Italics* mine.) (These are: secondary rupture, increased growth of fetus, and suppuration.)

Tait (London *Lancet*, September 4, 1886): "Of this variety (extra-peritoneal hematocele) probably 95 per cent. of the cases get well by being left alone, while the others suppurate and require to be opened."

Either these hemorrhages are not caused by ruptured tubes, or *ruptured tubes are not nearly as fatal as claimed, unless they cause free hemorrhage.* That the latter view has some merit can be substantiated by the following quotations:

Price (p. 862): "Formad reported thirty-five post-mortems in which he found ruptured tubal pregnancy; thirty-one of them had died *within a few hours* after the appearance of unfavorable symptoms." (*Italics* mine.)

Werder (Trans. Amer. Assoc. Obstet. and Gynecol., vol. iv. p.

208): "We have, therefore, *five cases out of a total of six in which there is a strong probability of recovery, though undoubted rupture into the peritoneal cavity had occurred.* (*Italics* mine.) Ordinarily we could hardly expect such favorable results, but I feel confident that the percentage of recovery is much larger than we have been led to believe. . . . Within a year I have had an opportunity to see two specimens of tubal pregnancy removed post-mortem from cases unknown to me, which probably could have been saved by prompt operation; one of these, whose ovisac was not larger than a raspberry, died in a little over *five hours.*" (*Italics* mine.)

I wish to be placed on record as taking exceptions to Dr. Price's sweeping assertion in regard to operative interference in every instance of extra-uterine gestation, and in this connection I call attention to the cases reported yesterday by Dr. Peck, one of which I took the liberty of criticising. I said I thought operation in that case was not necessary. Dr. Peck told me after the meeting that the case was not reported correctly; that it was diagnosticated as one of unruptured tubal pregnancy. My criticism was therefore correct, but falls with this explanation.

Dr. X. O. Werder, of Pittsburg.—Dr. Rosenwasser quotes me as saying that I thought the case I reported would have gotten well without operation. That is correct. Three of the cases reported would probably have recovered, as hemorrhage had apparently ceased at the time operation was performed. The reason why I advocate operation in these cases is not, as he claims, because I have seen them die in five hours, but because I have seen three cases of extra-uterine pregnancy in which no operation was done, two of whom, at least, were not well at the end of six months. I examined one case six months afterward when she was still suffering from serious pelvic trouble; in short, was an invalid. The cases operated on, however, made an ideal recovery and regained perfect health at once. It is the comparison of the results obtained in my hands in the cases of ectopic gestation in which laparatomy was done with those making a spontaneous recovery that caused me to favor operation, not to speak of the dangers threatening those treated by the expectant plan.

A PLEA FOR BETTER SURGERY IN THE CLOSURE OF THE ABDOMINAL INCISION.

By H. W. LONGYEAR, M.D.,
DETROIT.

The frequency of the occurrence of hernia following abdominal section, resulting from imperfect union of one or more of the respective layers forming the abdominal wall, indicates an evident lack of correct technique, either in the methods used, or by their improper application, and seems to demand, for the future, more perfect work of aspirants to surgical fame. The general technique of abdominal surgery has now become so perfected as to cause the mortality per cent. to be reduced to such a low point that the disputes on the vital issues will soon cease for want of food, and be succeeded by those related to the perfection of the art. Soon the question will not be: "*did* she recover?" but "*how* did she recover?" The surgeon who not only saves his patient's life, but so performs his work as to leave her body in as perfect and natural a state as assisted nature can make it, will be deserving of the greatest merit. He cannot only write that talismanic word "recovered" in his notes, but he can afterward add those other words which, while perhaps not appearing so important to the reader of the statistics, are so gratifying to the true surgeon. To save life is commendable, but in preserving a life we should take good care that we do not make its possessor miserable and unhappy by a legacy of our own making. I do not think I am asserting more than is warranted by the evidence adduced by the advance in other branches of surgical technique when I predict that the time will speedily come when the occurrence of a hernia following an abdominal section will, with very rare exceptions, reflect on the skill of the operator, and be looked upon as the result of bad mechanical work. The cabinet-maker who should attempt to join the parts of a piece of furniture with glue, and neglect to press the parts tightly together during the

process, would fail in his object, and be deemed a poor workman, although otherwise his work might be perfect. The article made might be beautiful, but this defect would render it useless. So it is with the mechanic who works in living material; his work must be accurate in every detail if the result is to be complete and perfect. This is true of the technique relating to the treatment of the pedicle, intestinal adhesions, drainage, etc., but is especially so of that of the manner of closing the abdominal incision, as this procedure is not, as many seem to consider it, the simple bringing together of two smooth surfaces of one homogeneous tissue, but of a number of structures, each differing essentially from its neighbor in tension, elasticity, resistance, function, reparative power, physical conformation, etc., and requiring for their perfect union exact approximation of like tissues. Not only must the approximation be thus made, but the apposed surfaces of each tissue must be so held until the reparative powers have accomplished firm union. If the reparative processes in all the tissues were equal, the problem would be simpler; but this is not the case, as aponeurosis and fat require a much longer time to unite than peritoneum or skin. The aponeurotic tissue being the only strong non-elastic structure of those composing the abdominal walls, forms the bulwark of the abdomen, and is, in consequence, the most important layer to have firmly united. I think it safe to say that if this tissue be firmly cicatrized hernia cannot result. To secure this result requires the holding of the apposed surfaces of this structure in apposition for a much longer time than is necessary with the more vascular structures. *Tendinous tissue requires, under favorable conditions, from four to eight weeks' time to become firmly united.*[1] Consequently in this position, where the continuity of structure is being constantly severely tried—first, by the vomiting of the patient, resulting from the anesthetic, and afterward by straining at stool, coughing, and the constant natural pressure of the abdominal viscera, as well as the muscular contractions incident to the movements of the patient—it is only reasonable to believe that if we are to expect a firm union, this structure must be held intimately in apposition for at least eight weeks. This being admitted, and being the main point at issue, the question of the most efficient method of suturing arises, and naturally suggests the query: Is the

[1] See Amer. Text-book of Surgery, p. 330..

en masse suture—the method commonly used—sure to accomplish this object, and if not, then what method is there which will do so which presents the fewest objections to its use, and the greatest number of points in its favor? Let us commence with the consideration of the *en masse* suture, in comparison with the method that I shall advocate, viz.: the buried suture—its advantages and disadvantages. The points in its favor I should sum up as: (1) simplicity of application; (2) being removable, a wide range in selection of material is allowed; (3) when removed, no material remains in the tissues to set up irritation in the future.

Its disadvantages I should say were: (1) its presence in, and tension on, muscle and skin cause pain and muscular spasm; (2) by its tension it causes cutting of the tissues, resulting in a constantly increasing loss of holding power; (3) by it alone, complete immobility of the parts is not secured, and the approximation of like tissue cannot be assured; (4) even if its holding power were not destroyed by the cutting of the tissues, it cannot be left in long enough to insure the firm union of the aponeurotic structures; (5) as usually applied, it favors inversion and non-union of the skin, and inversion and pocketing into the wound of the peritoneum; (6) it favors the post-operative introduction of pyogenic germs into the wound; (7) it necessitates a long period in bed.

A method whose defects are of such a radical character and so far exceed its points of favor, must certainly be succeeded by one whose advantages will at least exceed its disadvantages. It certainly should be, because it is insecure and unsurgical, as with it the apposed surfaces are easily disarranged, and it lacks that necessary element of good surgery—mechanical exactness. A coaptation of parts that can be easily disarranged by the straining of vomiting and defecation, or other natural muscular movements of the patient, cannot be called secure; a coaptation of parts that has so many elements of doubt as to their exact apposition cannot be mechanically exact. Good surgery is certainly good mechanics, and if we do not first have the general principles of good mechanics well grounded in our minds, our surgery will not be perfect. This time-honored method of closing the abdominal incision is still used by some of the world's most successful abdominal surgeons, who freely admit the frequent occurrence of hernia as the result of imperfect union, and recognizing the imperfection of their work, give

many directions regarding the care of the patient to prevent the accident. Here are a few samples of the many directions given: The patient must be in as good physical condition as possible, so as to minimize the nausea of anesthesia, with its attendant strain of vomiting; the bowels must be freely evacuated in order to make the pressure from within the least possible, and they must be kept loose for a long time to avoid straining at stool; the patient must remain in bed, in the dorsal position, for many weeks; after getting up, must not become too fat; a well-fitting bandage must be worn for many months or years—and many other similar confessions of lack of belief in the security of their work. I would not belittle the value of this advice, as I think the most of it should be followed for the general welfare of the patient, and if the *en masse* suture be used, I believe all of it, and more too, will be necessary to make it succeed. But a surgical procedure that requires so many safeguards to make it successful is, to say the least, unsatisfactory, and something better should take its place.

Let us consider, briefly, the natural behavior of the respective layers of tissue forming the abdominal wall when drawn together by this suture: it passes through skin, fat, fascia, muscle, and peritoneum at a considerable distance from their incised edges, and, when tied, must, if possible, constrict the parts sufficiently to prevent their disarrangement. The variance in the degrees of elasticity and resistance of the respective layers causes them to act very differently when this force is applied. The external and internal layers, being elastic and non-resisting, will be bunched and inverted, while those having no elasticity—the aponeurotic tissues—may not be even approximated; or, if their margins are pushed to the centre of the incision by the force from behind, they may not be on the same plane, and other softer and more bulky tissues, such as fat and muscle, will be rolled between and prevent their union. This lack of approximation of the central tissues, because of their meeting on different planes, is sure to occur as a result of passing the sutures at an unequal distance from the margins of the wound. When the peritoneum is inverted it soon becomes forced deeper into the wound, and with the viscera constantly pressing into the pocket thus formed, the entering wedge is started that works (in the manner of the bag of waters at parturition) the further separation of the very softly cicatrized fascia as soon as the restraining stitches

are removed. The skin, being usually inverted when this suture is tied, will not unite properly when left to itself, so the edges are usually carefully picked out and approximated, and when the dressing is applied they seem to be in apposition, but, unless superficial sutures are used, they assume their forced position of inversion on the first movement of the patient. The defect that this produces is, however, of but cosmetic importance, and has but little to do with the real welfare of the patient's future. The vital defect lies deeper, where it is unseen, and where the edges cannot be picked together and made to even seem to approximate. Those who have used the buried suture know that cases often occur where the fascia retracts after division, so that considerable force is requisite to bring it together and a strong suture required to hold it properly in apposition. How futile to expect union of this tissue under such conditions with the *en masse* stitch. Bandages, trusses, and other ingenious props and supports are certainly the proper accompaniment of this suture in these cases, but even these splints and buttresses will not prevent the aponeurosis from separating as soon as the inflammatory exudate surrounding the scar has been absorbed. This description of the action of the parts with the *en masse* suture is not theoretical, but the result of personal experience and observation.

Many modifications of the *en masse* suture have been devised, but as they all have the one defect of the old suture, in not properly controlling the apposition of the aponeurotic tissues, they will not be considered. The only method known to me that is capable of doing this is that of the buried suture. The process is, theoretically, an ideal surgical procedure, as, by it, exact mechanical work is possible, and the union of no part is left to chance. Its advantages and disadvantages I should sum up about as follows: Advantages—(1) like tissue is joined to like tissue exactly where it is divided; (2) the junction of each layer is held so securely that muscular efforts of the patient cannot separate them; (3) it causes little or no pain during convalescence; (4) by remaining in the tissues for a sufficient length of time the firm cicatrization of the layers is assured; (5) as only the margins of the non-elastic structures are grasped by the suture, no loss of holding power can occur from the cutting through of adjacent softer structures; (6) inversion of skin and peritoneum cannot occur; (7) patient need not lie long in bed

to insure firm union; (8) the abdominal bandage not so necessary after the first eight weeks; (9) the danger of pyogenic germs (whose habitat in the epidermis has been recently demonstrated) being dragged into the tissues, or passing along the sutures, and thus causing infection, is avoided. Its disadvantages, I should say, were: (1) Non-reliability of material, as regards durability and asepsis, if the animal suture is used, and non-absorption, with resulting nidus for future irritation, if silk or silver wire be used; (2) requires about one-quarter more time to apply than the *en masse* suture; (3) if septic before, or if it becomes so in the wound, it may cause troublesome suppuration.

If it is admitted that the foregoing is a fair statement of the merits and demerits of this method, there can be no question as to its superiority over the *en masse* stitch. Its practical applicability seems to depend on the two points of doubt,—durability and asepsis. The difference in the time required to carefully apply the *en masse* suture, with the usual superficial stitches necessary to its proper completion, and that for the application of the buried suture is so little as to hardly need consideration. In fact, the peritoneal cavity itself is closed soonest by this method, and the patient can be coming out of the anesthetic while the other layers are being united, as very little pain is caused when the needle is not passed through the skin. The two objections to the animal suture (want of durability and doubtful asepticism) should not weigh one grain against the method when so much is at stake for the patient, as these can be overcome by the operator himself in giving personal attention to the preparation and care of his sutures. The use of soft catgut in sewing the abdominal wound will surely result in disaster, and unless the gut is prepared by the operator, and he knows by experiment that it has been properly hardened so that it will retain its tensile strength for at least eight weeks, he had better use almost any other suture material in preference to it. The kangaroo-tail tendon suture, as prepared by Dr. Marcy, is perfectly safe as regards durability, and, in using it, the surgeon need only be sure that it is aseptic, and that he is placing it in an aseptic wound in such a manner that it will remain aseptic, to make success certain. Even the use of buried sutures of silkworm-gut, silver wire, or silk, properly sterilized, would be far preferable to the old method, as it only subjects the patient to a possible future

local irritation, because of their non-absorbability, while the latter subjects the patient to the possibility of the horrors of eventration.

The principle of my contention, that aponeurotic tissues require more time to unite firmly than the old stitch admits of, is recognized by Mr. Tait in his operation of perineorrhaphy, where he uses practically a buried suture of silkworm-gut and leaves it *in situ* for six weeks. He claims that more complete union is obtained by leaving the sutures for this length of time than when they are removed in nine or ten days. My own experience with this operation has led me to the same conclusion, and I am sure this result of more perfect union being obtained under these circumstances is due entirely to the fact that the tendinous tissues are thus given time to solidly cicatrize.

I will say but little of my own experience with the buried suture, as it has been limited to a period of but two years, which is too short a time from which to draw conclusions regarding hernia. During this time, however, it has proved highly satisfactory to me, as it has given perfect results, with a few rare exceptions of temporary defect only. I have used but the one material, the kangaroo tendon, and in most of my cases have applied it according to Dr. Marcy's method, sewing each tissue separately, and using the continuous suture (with an occasional button-hole stitch to prevent slipping) for peritoneum and fascia, and the lacing stitch for fat and skin. I use a fully curved Hagedorn needle throughout. After the peritoneum is closed, the wound is washed thoroughly; this is repeated after the closure of each successive layer, using sterilized water, excepting in cases where infectious material has been removed from the abdominal cavity, when a 1 : 5000 sublimate solution is used. It is my custom to select a fine suture for the peritoneum, fat, and skin, and a medium-sized, strong, firm tendon for the fascia. I never sew muscular tissue, unless cut transversely, as it serves no useful purpose to do so, and interferes with its function by crippling the fasciculi held within the grasp of the suture, besides causing more or less hemorrhage, which, at this stage of the operation, may cause interference with healing by first intention. When a drainage-tube is used, or in closing the incision around the stump in hysterectomy, I do not use the buried suture up to the tube or stump, but leave just enough space for one stitch, which I close with one *en masse* suture of silkworm-gut, thus sealing the

buried suture from possible infection through the medium of the drainage or stump opening. I consider this a very important point in the use of the buried suture, as, without it, infection of the wound is almost certain to occur in cases requiring long-continued drainage. For the closing of the non-elastic structures, I believe the continuous suture to be far more preferable to the interrupted, as it not only seals the parts more closely but also acts as a splint, giving the whole line of incision an added thickness and strength. I have experienced but little trouble with abscess of the wound after the use of this suture, having had but a small number of cases of suppuration, all of which have healed speedily under ordinary treatment, giving no more trouble than usual mural abscesses occurring with the use of the old stitch. I have had no personal experience with the use of other material for buried sutures, but am inclined to think highly of silkworm-gut, and if it were not for its rigidity and non-absorbability, would prefer it, as it is otherwise certainly the ideal material for the use, for it fills all other requirements, besides having the merit of being easily asepticized.

After writing the foregoing I realized the propriety of incorporating some of the results of the experience of others on the subject, and finding a dearth of statistics regarding the occurrence of hernia following abdominal section, and desiring to collect data that would add interest and value to my paper, and probably result it the collection of valuable statistics, I sent letters of inquiry to a number of prominent abdominal surgeons, which were responded to quite generally—and *generously*, too, I may add—the answers evincing much interest in the matter. As regards the making of statistics, their contents are, with two or three exceptions, somewhat disappointing, as the data given are not generally of the necessary character for that purpose; but taken individually, with the weight that each well-known name carries with the opinion behind it, they become of very great interest in this connection, and make an instructive compendium to the subject. I will read them as they are written, omitting only such matter as does not pertain to the subject in hand. I will say in preface that most of them were written in answer to the following five questions: 1. What method of closure of the abdominal incision do you usually employ? 2. Do you have hernia resulting, and if so, in about what per cent.? 3. What do you believe to be the chief causes of hernia

occurring after abdominal section? 4. On how many cases of hernia resulting from abdominal section have you operated? 5. What is your opinion of the buried animal suture in closure of the incision?

The following list comprises the names of the gentlemen who have honored this subject with their opinions: George Granville Bantock, T. A. Emmet, Henry O. Marcy, A. Martin, Joseph Price, Auguste Reverdin, Max Sänger, Thomas Savage, A. J. C. Skene, J. Greig Smith, T. G. Thomas, F. Winckel. I will read them in the order named, the letter of Dr. Bantock coming first. He says:

"The answers to your questions are shortly as follows:

"1. In the majority of cases I close the abdominal wound with sutures including the whole thickness of the wound, but only including a small portion of muscle. I include a good quarter of an inch of skin, but only about an eighth of peritoneum. When the incision extends beyond the umbilicus I go straight through the structure. In these cases I divide the tissues between the skin and peritoneum so as to obtain a nearly uniform breadth of raw surface for the whole of the upper portion of the wound; I trim the skin into a straight line, then I bring the peritoneum together by a continuous suture of very fine silkworm-gut or catgut from the upper angle of the wound to about an inch below the umbilical region, and complete the closure with sutures embracing the whole thickness of the wound, just catching up the peritoneum so as not to leave a pocket. In cases of hysterectomy by the extra-peritoneal method, I bring the peritoneal surfaces together behind the serreneud by a suture of fine silkworm-gut, which goes first through the peritoneum on one side, a quarter of an inch from the edge (*i. e.*, entering on the secreting surface and returning the same way), then through the uterine peritoneum, and again through the peritoneum on the opposite side. When the suture is tied it brings two broad surfaces of peritoneum together, in apposition to one another, and to that covering the lower segment of the uterus (cervical portion). I then bring the edges of the peritoneum together by two, three, or four sutures of catgut, thus closing the lower angle of the wound (above the stump) by two rows of sutures, as in the case of the upper part. In all cases, for the main abdominal sutures, I use silkworm-gut, which I have advocated for over twenty years.

"2. I cannot say 'absolutely no,' because I am aware of one case of ovariotomy in which the patient has a small hernia which

may require an operation; but I attribute it to the fact that the patient soon afterward got married and had several children in rapid succession. I have never operated on one of my own cases, but I have operated on four cases in which the primary operation had been done by other surgeons. In two cases of supra-vaginal hysterectomy by the extra-peritoneal method, with large pedicles, I have seen a small hernia resulting, but not one necessitating interference surgically.

"3. I cannot say that there is one 'chief cause' at work in the production of hernia. Suppuration of the wound is an important one. Thin abdominal walls, and, indeed, very fat abdominal walls, favor the production of hernia. A large stump of an extra-peritoneal hysterectomy decidedly tends to render that part of the parietes weak, but with careful strapping, and the avoidance of too early getting about, the accident may be prevented.

"4. I have already answered the question.

"5. The buried suture is of great service in certain cases, but it is not necessary in the great majority of cases.

"Allow me to add that silkworm-gut is the best material for the usual abdominal suture. As a rule it is also best for the buried suture, especially if there be much tension. But it is essential that the wounds should heal by first intention."

The following is from Dr. Thomas Addis Emmet, and I know of no one in the field of gynecology who has earned a greater right to be listened to on the subject of plastic surgery:

"For many years I have used only silver wire, and I always close the wound with as much care as a piece of plastic work. I have taken great trouble to follow my cases, and I know of but a single case of hernia occurring after abdominal section made by myself. I have never had the time to keep a record of my cases, and those at the Women's Hospital were stolen some years ago, so that I have no idea of how many times I have opened the abdomen, but believe that I must have operated over a thousand times. Two or three times I have brought the peritoneum together with buried sutures in addition to the silver wire, and in each instance an abscess formed, giving a great deal of trouble. In a late paper, read before the County Society of New York, I showed the action of the silver wire as a splint, and I claim that, with its proper use, a broader surface can be united than with any other material."

Dr. Henry O. Marcy, to whom we are chiefly indebted for the kangaroo-tail tendon suture, speaks in no uncertain terms on this subject. He says:

"1. During the last eight years I have employed exclusively the buried animal suture in the closure of all abdominal wounds, except for a few months, during which time catgut was substituted for tendon, because of the difficulty of obtaining a supply of tendon from Australia. For more than ten years preceding I had used the buried animal suture in a great variety of wounds, and was led to its adoption in laparatomy because of its exceptional value in the reinforcement of the weakened structures, especially as demonstrated in operations for the cure of hernia. My method from the first has been essentially the same. The peritoneum is first closed separately; this may be effected by suturing in a variety of ways. For ease and rapidity, if for no other reason, the *continuous* suture is to be preferred. I employ, usually, the double continuous suture, which is easily and rapidly taken by the use of a curved needle with the eye near the point, and by re-threading with the opposite end, the suture is introduced from either side through the same puncture. The result is an even, continuous, close apposition of the serous surfaces of the peritoneum, retained at rest without undue constriction. A fine tendon should be selected for this purpose. When one of the recti has been separated, as is usually the case, it is better to rejoin the muscle by a row of sutures. This having been effected, I consider the accurate coaptation of the thick investing fascia (*linea alba*) of the first importance. This is preferably effected by a line of sutures similar to the one closing the peritoneum. The more or less thick layer of fatty tissue is preferably brought into apposition by one or two light lines of running sutures, usually taken with a medium-sized, fully curved Hagedorn needle, introduced from side to side deeply through the uninjured structures. Care is taken that the introduction of the needle commences exactly opposite the emergence of the preceding stitch, the importance of which is twofold: First, that the coaptation of the wound may be accurately effected; and secondly, of not less importance, that the suture itself may cross at right angles to the divided tissues, so that when drawn upon it accurately coaptates the lips of the wound and is not interposed between the injured parts. The skin is united by the use of a fine, full-curved Hagedorn needle,

and a small tendon suture, introducing the stitches in precisely the same manner just described. I have called this the parallel suture, because each stitch is taken through the deeper layer of the skin only, and is inserted exactly parallel to the line of the division of the skin, and when each stitch is taken, entering directly opposite the emergence of the one preceding, it will be noted that, when the suture is drawn upon, the coaptation is accurate, without puckering, and that it crosses the wound exactly at right angles to it. When a suture is introduced in this way, with precision and care, the divided edges of the skin are brought in contact with an accuracy impossible to secure by any other method, and yet the suture is completely buried. A layer of collodion, reinforced with a few fibres of cotton, applied to the well-dried skin, completes the dressing. If the operation has been conducted with aseptic care, the wound must remain aseptic. In most instances, it is immaterial whether a bandage and pad be applied, although, after the removal of large tumors, the support of the relaxed abdominal walls is usually a comfort.

"2. In quite three hundred laparatomies, where a complete closure of the wound has been effected, I recall but two cases of ventral hernia following the operation. In one, the most pronounced, the incision was necessarily a long one, where I removed a large uterine myoma, but the hernia was attributed far less to the length of the wound than to the extreme thinness of the abdominal wall, which had become atrophied in an extraordinary degree, because of the projection of the tumor, which had the appearance of having taken "deck passage." In the second case there is a small opening through the fascia, very probably caused by separation and non-union of its edges.

"3. Undoubtedly one of the most common causes of hernia is the routine use of the drainage-tube, by which a portion of the wound is necessarily kept open, so that primary union cannot take place, and a portion of the wound heals by granulation. Although I have never refused operation whenever the patient's condition demanded, I find the use of the drainage-tube in my practice has scarcely exceeded three per cent. A second and common cause of ventral hernia is the imperfect coaptation of the parts by the use of the interrupted suture; even when taken with the utmost care they constrict the tissues at intervals, and are usually tied very

tightly in order to prevent bagging or separation of the abdominal wall between the sutures. This necessarily narrows, perhaps even to one-third, the thickness of the coaptated structures, and if any of the enclosed tissues are separated it is necessarily that portion midway between the loop of the stitches, the thickened, reinforced connective-tissue fascia (linea alba), upon the integrity of which the parietes depend in the resistance of intra-abdominal pressure.

"4. Perhaps not more than six, although cases come under my observation very frequently, and within the last three or four years I have usually advised operation for its cure. Such patients, generally, have great dread of subsequent operation, since, as a rule, hernia follows the more difficult cases, where large drainage-tubes have been retained for a long time, and the wounds have often been infected ones.

"5. The answer to this question is clearly outlined in what I have already written. Properly used, that is to say, the suture itself *aseptic, aseptically applied* in an *aseptic* wound, the buried tendon suture marks one of the greatest advances in modern surgery, and he who is master of the technique of its application, has acquired a distinctive accomplishment of inestimable value and importance. Somewhat recently I examined the history of about six hundred operative cases thus treated in my private hospital, with the surprising result of less than two per cent. of suppurative wounds."

Dr. A. Martin, of Berlin, writes, with his characteristic enterprise, in English, as follows:

"It is rather impossible for me to collect the exact number of cases of hernia following abdominal section, at the present time. Undoubtedly, this is a question of very serious importance, which I am going to examine as soon as I find leisure to collect the late and final results of my laparatomy cases. I propose to set myself to this task in a year or two. My impression is, that abdominal hernia has become much rarer within the last seven years, among my patients, since I give all of them the bandage of Dr. Beely, represented in my book on *Pathology and Therapeutics of Diseases of Women*, 2d ed., 1887. I order the patients to wear it the rest of their lives. Many obey, many disobey; and among them I see a large number of patients belonging to the better-situated classes, who have conserved the tensity of their abdominal wound. This I am accustomed to make as long as seems convenient for a free

operation, according to the size of the tumor, so that I apply five to seven sutures, including skin, connective-tissue layers, muscles, and peritoneum. Between these five to seven sutures, superficial catgut sutures close the skin wound. No vessel ligatures, no drainage, interrupt the incision-wound. Compression bandage, with cotton-wool and gauze binders. For nine to ten days consequent dorsal decubitus. The silk sutures are removed the eleventh or twelfth day. Patients sit up the thirteenth day, leave bed the fourteenth day, and return home according to their home comfort. Strict orders never to leave bed before the bandage is applied. I see suppurating wounds in about eight per cent., but only one-half per cent. have abscesses in the abdominal wound; the other six per cent. show only sloughing of the canals of the stitches. These cases are treated by simply protecting with dry cotton-wool, with no drainage, incision, or cauterization. Exceptionally, I cover the outlet of the stitch with iodoform."

Dr. Joseph Price, whose rich experience in abdominal surgery is probably unequalled in this country, testifies as follows:

"1. I close the incision with sutures of silkworm-gut or silk, interrupted, three or four to the inch, through entire thickness of abdomen. Have exercised more care than is common in closure of incisions.

"2. Have had hernia in about five per cent. in a series of 1500 sections. The others are too recent to count.

"3. Believe the causes of hernia to be imperfect closure, long incision, prolonged anesthesia and nausea, early rising, etc.

"4. Have operated on over one hundred cases of hernia resulting from abdominal section.

"5. The buried animal suture is not a safe and sure material.

"Post-operative sequelæ, and operations for their relief, have formed a large part of my late work. It is difficult, complicated surgery, and is a new field for operative surgery. It demonstrates the necessity of more care in primary work. More care would give better results."

Dr. Auguste Reverdin, of Geneva, Switzerland, writes as follows:

"My practice is to sew the peritoneum with interrupted sutures of catgut. Over these first sutures, approximating very exactly the serous membrane, I place a second series approximating the recti abdominalis and their aponeuroses (also with catgut). Then, finally,

a third layer of sutures close the skin, for which I usually use silk, disinfected by boiling in a five per cent. carbolated solution, or silk-worm-gut disinfected with corrosive sublimate. For these cutaneuous sutures I use, indifferently, either continuous or interrupted suture. When the abdominal walls approximate with difficulty, or are very thick, or I have any special reason to desire a more solid union, I use either Girard's suture, or else separate sutures of strong silk, each passing by itself (isolated) through the entire wall. But what I seek for mostly, for future solidity, is to approximate exactly, tissues of the same kind—serous to serous, muscle to muscle, etc.

"Girard, of Berne, uses a process composed of two sutures; one approximating at a distance, the other completing the approximation. The first one carries a silk thread through the skin at three or four centimetres from the edge of the incision, and is tied so that the knot comes to rest on one of the needle punctures through the integument. The thread is then carried through a small piece of rubber tubing, three or four centimetres long, which is laid down parallel to the incision, again carried through the skin to the other side, there to pass through another piece of tubing, disposed, not in front of the first one, but on a plane immediately below it. This suture is very desirable to bring together the edges of a wound, and to help out the much more superficial stitches, which are thus enabled to approximate the skin with far greater facility.

"Eventrations (herniæ post-operative) are, up to date, unknown in my practice. I have had, however, one case with a slight distention (after extirpation of fibroma), but an abscess, previous to the operation, had thinned the abdominal wall. After operation I apply a thick layer of absorbent cotton over the abdomen and around the patient, and secure with flannel bandage. The catgut used is sterilized by heat, and is absolutely safe, both from the aseptic and solidity standpoint. In my estimation hernia, after operation is especially due to bad suturing, inadequate dressing, and also to fixation of the stump in the wound."

Dr. Max Sänger, of Leipzig, answers my questions as follows:

"1. I close the abdominal incision simply with deep and superficial sutures, when the whole thickness of the wall does not go beyond two to two and one-half centimeters. For sutures I use *only* aseptic Chinese silk (not the braided kind, the so-called Turner silk, which, on account of its braiding, is harder to asepticize). The

peritoneum is included rather broadly in the deep sutures, which, however, on the cutaneous side, are entered and brought out in the near vicinity of the wound-lips. As to the aponeurotic membranes, which have a tendency to retract, they must be looked after and positively taken up in the suture. The distance between sutures averages one and one-half centimeters. When the abdominal walls have a thickness of more than two and one-half centimeters, or a specially solid suture is required (as, *e. g.*, after radical cure of ventral hernia), I insert between the regular deep sutures, which pass through all the layers of the abdominal wall, half-deep, buried sutures (also *always* silk), which all include the aponeuroses.

"2. I have witnessed a small number of small cicatricial herniæ, occurring, almost invariably, in cases where drainage was secured from the lower angle of the incision, or where the stump was treated after the extra-peritoneal plan.

"3. I believe the causes of hernia to be drainage, effected either by glass tubes or gauze; extra-peritoneal treatment of stump; insufficient sutures of abdominal wound, especially neglecting to take up the aponeurotic membranes; too early removal of the sutures; use of soft catgut; too early getting up of patient; neglect in wearing an efficient abdominal binder after getting up; too early resuming of heavy work, etc.

"4. Out of four hundred celiotomies, I have been obliged to operate on only one case of considerable cicatricial hernia, and this, three years after the primary operation.

"5. I have, in this matter, no personal experience, but am inclined to think that two dangers are to be feared when using too thin and soft catgut: the reopening of the wound and consecutive cicatricial hernia. Silk, and even silver wire (as used by Schede, in Hamburg), may be buried in the wound just as well as catgut (or kangaroo-tendon), thereby securing a much more solid and reliable closure of the parietal wound." [For the translation of the two last letters I am indebted to Dr. Becelaere, of this city.]

Dr. Thomas Savage, of Birmingham, England, writes as follows:

"1. I always use scalded silk sutures, with a needle at each end, and pass through peritoneum and the whole thickness of the abdominal wall.

"2. I seldom see a hernia, and I cannot give a percentage, as it is impossible to follow up the cases afterward.

"3. I think herniæ are chiefly due to: (*a*) A long incision; (*b*) patient allowing herself to get too fat; (*c*) a badly fitting belt or none at all; (*d*) I do not think the drainage-tube is specially a cause of hernia.

"4. I believe I have operated on only two cases for relief of hernia after abdominal section.

"5. I have no experience with the buried animal suture in closing the incision. In closing an umbilical hernia I have sometimes brought the opposite sides of the ring together with silk, without piercing the skin, but I have subsequently removed the sutures. The silk, to my mind, is equal, if not superior, to any other method that I have seen in the practice of others."

Dr. Alexander J. C. Skene says:

"I have closed all of my abdominal section wounds by suturing *en masse*. In my earlier cases I used silver wire. For the last sixteen years I have used prepared silk, which I believe to be preferable. I have never, so far as I know, had a ventral hernia excepting in cases of incomplete operation and in cases of bad adhesions, where long-continued drainage was necessary. In this class of cases, hernia has occurred in five that I know of. There is one exception—viz., my second ovariotomy was a semi-solid tumor which required an incision fourteen inches long; the patient became pregnant soon after her operation and has had, altogether, three children, I think, since. She developed a large ventral hernia, but this is the only one who had hernia follow when the wound healed by first intention. I have no doubt that hernia may have occurred in some of my cases, but I have never seen them. I am unable to give the number of cases that I know have escaped hernia, but, I think, I will be perhaps within bounds to say that I have had at least four hundred that I know resulted in this satisfactory manner. I may add that I feel perfectly confident that if the sutures are carefully and accurately introduced, in sufficient number, and of the right material, and the wound heals by first intention, there is no likelihood of hernia following. In cases that I have seen treated by others I have found hernia that could be traced to the formation of abscess in the line of the wound, which necessitated healing by granulation, and this, I believe, invariably leads to hernia.

"With the experience that I have had, I need hardly say to you

that I have never practised uniting the peritoneum, fascia, and muscular layer of the abdominal walls with buried sutures."

Mr. J. Greig Smith, with whose excellent work on abdominal surgery we are all familiar, sends me the following:

"1. I employ the method of abdominal suture described in my book on *Abdominal Surgery*—viz., one suture (of silkworm-gut) including all the tissues: skin, fascia, muscle, and peritoneum. The suture takes hold of the margins of skin and peritoneum, but dips deeply into muscle and fascia. The suture is so inserted that it leaves a *pouting* and not a *depressed* margin along the incision.

"2. I have had no hernia for eight years. I have had to treat hernia of other surgeons' cases.

"3. Imperfect suturing of divided fascia and imperfect approximation of muscle surfaces.

"4. Three—none of my own.

"5. The buried animal suture, to unite peritoneum, is a superfluity, and to unite muscle, is of doubtful utility."

Dr. T. G. Thomas writes:

"With chromicized catgut and interrupted suture I close the peritoneum, recti muscles and sheath of same. *Before* doing this, I pass deep sutures of silkworm-gut or silver, but don't tie. Then (*i. e.*, after closure with catgut) I close the whole wound. Results have been good as to abscess and hernia. I sometimes close the peritoneum separately and then the muscles, but I see no great advantage from this."

Professor Von Winckel, of Munich, writes me a very nice letter in English, of which the following is the substance:

"1. I sew the peritoneum with catgut, the muscles with silk, and the skin with silkworm-gut.

"2. This method I have used for two to three years, and cannot say in how many cases I have seen hernia after it, but I think the results are much better than by sewing up all the walls together.

"3. The chief cause of hernia occurring after abdominal section, I think, is *that the union of the muscles is not always perfect.*

"4. In about three or four cases of hernia resulting from abdominal section, I operated by excision of the whole hernial sac.

"5. I am quite sure that the use of the buried animal suture in closing the incision of the peritoneum *is very good*, but *not good* for the union of the muscles."

As I previously remarked, there are no special statistics to be gleaned from these communications, only one or two making an effort to be exact in stating percentage of hernias. There is, however, one very suggestive and valuable feature in these letters that I desire to call attention to, and that is the summing up of the answers to my third question, relating to the chief cause of hernia. I find fifteen separate causes given, viz.:

(1) Suppuration of the wound; (2) very thin or very fat abdominal walls; (3) extra-peritoneal treatment of stump; (4) failure to wear bandage; (5) imperfect closure of wound; (6) long incision; (7) prolonged anesthesia and nausea; (8) too early rising; (9) drainage; (10) failure to take up aponeuroses in sutures; (11) too early removal of sutures; (12) use of soft catgut; (13) patient becoming too fat; (14) non-union of muscles because of imperfect approximation; (15) use of the interrupted suture.

I think we will find that a critical examination of these fifteen causes will demonstrate that they are almost all due to defects of the *en masse* suture, and that the use of the buried suture should solve the problem. I will consider them separately:

First. Suppuration of the wound can occur with either method, but is much less liable to take place with the buried suture, if properly placed and sealed, than with the *en masse* suture, as in the latter pyogenic germs may enter the wound *via* the sutures or their sinuses. In fact, suppuration is often the result of the dragging in of germs attending the removal of the *en masse* suture.

Second. Very thin or very fat walls. This cause is undoubtedly due to the fact that these conditions prevent the accurate coaptation of the aponeuroses, which could only take place with the *en masse* suture, and would be prevented by the use of the buried method.

Third. The extra-peritoneal treatment of the stump in either case is bad (and I believe some day will be considered unsurgical), but it stands to reason that if the fascia is brought closely around the stump and held there by the buried suture until it forms a solid firm ring around it, the viscera will be less liable to burst through it than if sutured but for nine or ten days, and afterward wedged apart before firm cicatrization has had time to take place.

Fourth. Failure to wear bandage. When the aponeuroses form solid union with the buried suture they require no bandage, as they are as strong as before incision.

Fifth. Imperfect closure is much less liable to occur when the exact method of the buried suture is used, than with the "guess" method of the *en masse* stitch. In one you *know* the fascia is approximated, while in the other you *think* and *hope* it is.

Sixth. Long incisions are always to be deprecated, but if healed by first intention after the use of the buried suture, hernia cannot occur, as, by this method, the chance of the interposition of other tissues between the apposed edges of the fascia is obviated.

Seventh. The straining of vomiting resulting from the nausea of prolonged anesthesia need not be feared when the buried suture is used, as the fascia cannot be separated by any such force when united with a strong suture.

Eighth. Too early rising is only to be feared after removal of sutures, and as the buried suture remains indefinitely to exert its restraining force, this cause has to do only with the *en masse* suture.

Ninth. Drainage. This cause will hold good with both methods, but with the increasing tendency to use small tubes, the danger is becoming much less. Large gauze drains should be avoided on this account. The buried suture, however, properly protected from the drainage opening by one *en masse* stitch, will usually insure the solid union of the facia close to the tube, and thus give the best result.

Tenth. Failure to take up the aponeurosis in the suture can only occur with the *en masse* stitch.

Eleventh. Too early removal of sutures refers only to the *en masse* stitch, and is obviated by using the buried suture.

Twelfth. Use of soft catgut is unnecessary when the safe tendon suture or even silkworm-gut or silver wire can be obtained.

Thirteenth. Patient becoming too fat will not separate the cicatrix of the aponeurosis reinforced with a strong tendon suture.

Fourteenth. Non-union of muscles is not likely to occur if their sheaths are properly approximated and held in place by the buried suture. If cut transversely, a fine tendon will insure their union.

Fifteenth. The use of the interrupted suture—last, but greatest of them all, as it covers most of the other causes and is easily obviated, as all the others are, by simply using the buried animal suture in the closure of all abdominal incisions.

MANAGEMENT OF THE ABDOMINAL INCISION.

By CHARLES A. L. REED, M.D.,
CINCINNATI.

The concurrence of stitch-hole abscesses, of suppurations in the line of incision, of sinuses, of painful cicatrices, of deep and painful indurations along the line of the cut, and, finally, the occurrence of ventral hernia, in the field of abdominal operations are but so many proclamations of defective methods in dealing with the abdominal incision. I do not wish to be understood to imply that these conditions are of frequent occurrence, for I know that in my own experience, and in the experience of those with whose practice I am familiar, they occur but with extreme rarity. Neither do I wish to be understood as inferring that these accidents are always preventable, for we all know that it is impossible to always prevent infection of the exposed parietal margin when dealing, for instance, with a ruptured pus tube; nor is it always possible to protect from impairment a recently united incision in a case of, for instance, a violent cough from an emphysematous lung. I, however, do believe and maintain that, by more careful attention to details in preparation for operation, in the technique of the operation itself, and in the after-treatment, we may sometimes prevent the unpleasant sequelæ to which allusion has just been made. It is with this object in view that I invite you to a study of the abdominal incision, and I trust you will pardon me if I deal with the subject in a very elementary fashion.

It is important for us at the very outset to remember a few salient anatomical and anatomico-physiological facts—viz., (1) we should bear in mind that the skin has a superficial epithelial layer, which is arranged, not smoothly as appears to the naked eye, but in numerous microscopical folds of variable depth, but always deep enough to serve as a lodging place of microscopical *débris*, or a

convenient abode for various bacteria. There are also in every square inch of abdominal integument not less than seven hundred orifices of glands, sebaceous and sudoriferous. It is well to remember, also, that in and about the umbilicus there are numerous corrugations and deep folds, in which secretions accumulate and not infrequently decompose. (2) It should be held in mind that the adipose tissue is nothing more or less than a deposit of numerous oil globules in the interstices of a very loose connective tissue, and that the interior of these deposits are but poorly supplied with nutrition by the capillaries. (3) The next important anatomical factor is the linea alba, which is formed by the blending of the fascia-like aponeurosis of the oblique and transversalis muscles. This line, it will be recalled, lies between the sheaths of the rectimuscles, and that the aponeurosis of the transversalis passes posteriorly, the two aponeurotic structures intimately blending themselves in the median line. (4) It should, finally, be remembered that the peritoneum is but loosely attached to the abdominal wall, over which it can glide with considerable freedom.

I have enumerated these anatomical memoranda in the order which has been observed, for the reason that in any systematic study of the abdominal incision these structures come under observation from the skin inward. It is with the integument we have first to deal, both in preparation for, and in execution of, the operation. It is in this structure that we have to deal with conditions that are extremely favorable to infection, to prevent which requires that systematic preparation to which I ask your attention. I shall not, of course, speak of the preparation of the surgeon's hands, as that is a subject not now to my purpose, although I believe that the essential feature of the antiseptic details which I am about to enumerate as applicable to the abdominal integument can be utilized with equal advantage in preparing the hands of the operator.

The conditions to be overcome in the preparation of the abdomen in the interstices of the epithelial layer as the result of, or rather are: (1) the accumulated *débris* which gathers on the surface and the joint product of, secretory activity of the glands and normal epithelial exfoliation. (2) Germ elements which may have been arried into the field from without or may have occurred as the result of decomposition of the secretions which may have become

deposited in such deep folds as are to be found in the neighborhood of the umbilicus. With these two conditions in my mind, I approach the preparation of my patients with, first, of course, the usual routine bath; next, I endeavor to liquefy the oily and other deposited material by treating it with some of the lighter oils. For this purpose I generally employ turpentine or oil of cedar. Refined olive oil recently re-boiled will answer the purpose very well, and is without the objection of the odor of either of the other two, an odor that is very depressing to sensitive patients. After applying the oil, ether is at once applied in considerable quantity and with vigorous friction. The addition of 1 per cent. of caustic soda or of caustic potash will give a saponaceous reaction with a perfect detergent effect. This is now washed off with tepid sterilized water, followed by a solution of bichloride of mercury, 1 : 1000. A towel wrung out of the latter solution is now placed over the abdomen and confined by a dry towel placed over it. These preparations are made quite half an hour before the patient has her anesthetic. I have discarded the use of alcohol for the season that it is not so good a detergent as ether, particularly when the latter is used in the combination which I have suggested; and further because its effect is to contract the epithelial covering and thus render the minute folds inaccessible to the antiseptic solution. I may add in concluding this paragraph that these details are applied with particular care to the umbilicus. Before beginning the incision, I surround the field of operation either with bichloride towels or with a sheet of gauze similarly saturated and with a slit cut in it.

The next anatomical fact which I enumerated comes into point immediately after the incision has been begun. This anatomical fact, you will recall, related to the character of the adipose tissue and to the fact that these deposits of fat were but poorly supplied with nutrient vessels. The lesson drawn is that when the tissue is subjected to undue violence, or to any influence that seriously disturbs the molecular arrangement, recuperation takes place with extreme difficulty. A still more definite lesson is that when a small vessel in the adipose tissue is wounded we had better either wait a few minutes for the hemorrhage to cease spontaneously, or else control it by hot sponge pressure, than to subject a very considerable portion of the tissue to severe pressure by the hemostatic

forceps. Tissue that is thus subjected to violence, particularly when the forceps is kept on for a considerable time, is liable to become necrotic, and may become the nidus of an annoying abscess in the line of the incision. When hemostatic forceps are thus applied they ought to be removed within two or three minutes. Pressure for this length of time is generally sufficient to control hemorrhage from any ordinary vessel.

The linea alba is entitled to more consideration than it receives at the hands of abdominal surgeons, a fact which becomes apparent in the very next stage of the operation. I take great pains to find the linea alba, and, in that particular, I am totally at variance with the example and teachings of those surgeons who advise that the incision be proceeded with at this juncture without reference to the tissue that may be lying immediately beneath the blade. I am disposed to charge nine-tenths of all post-operation hernias to the failure of operators to make the incision through the linea alba. It may be said that it is difficult to find the linea alba, but if the operator would only take the pains to make a slight transverse incision through the presenting fascia he will generally be able to locate the line without a moment's delay. And now, having found the line and continued his incision through it, what has he gained? In answer to this query let me call his attention to the fact that he has not exposed either rectus muscle and that there is no possible retraction of the fascia, for both the superficial and the deep layers are intimately blended at this point and cannot slide, the former between the superficial fat and muscle, the latter between the muscle and the sub-peritoneal fat. If, however, the incision be made to one side of the linea alba, the fascia on that side will be found to have been retracted, while that upon the other side will have remained *in situ*. When the task of closure comes, in a case in which the incision has been made to one side of the median line, the greatest difficulty will be found in approximating the fascial margins; but I shall have occasion to speak more in detail upon this subject when I come to discuss the closure of the incision.

The next step and one which gives point to the final anatomical observation which I made is now at hand. The peritoneum is exposed. It should be carefully divided, as nearly as possible in the median line. The facility with which it glides over the parietal

structures makes it difficult at times to discover just where the median line should be located. I generally divide the peritoneum by means of a pair of scissors.

The operation within the cavity having been completed, we come next to the final cleansing of the incision. If pus has come in contact with the wound it should have been removed at once, either by sponges or a forcible jet of sterilized water. If it has been subjected to any friction the pus will become mechanically forced into the interstices of tissues from which it can be dislodged with but little certainty and only with difficulty. If the fascia has become retracted it will have produced folds, as it were, in the edge of the wall, which folds ought to be carefully opened and cleansed. This final cleansing should be done as nearly as possible by the use of irrigation. If sponges are employed there is danger of forcibly removing the small hemorrhagic infarcts which have closed the vessels, and the removal of which would result in having the wound again bathed in blood.

The question of closure is one to which too much attention cannot be given. The ultimate results of important operations often depend upon careful attention to the details of the procedure. Let me state it as an axiom, to which there are no exceptions, that, in the closure of the abdominal wound, like structures should be approximated to like structures. It is precisely in the failure to observe this law that we have the cause, first, of intestinal parietal adhesions, and, next, ventral hernia. If the incision has been carefully made in accordance with the rule which I have laid down, there need be but little difficulty experienced in this particular. If, however, the incision is so made that the fascia is retracted, great difficulty is experienced in bringing the margins of these structures, on the side on which they have been liberated, in contact with the similar tissues on the opposite side. This is readily illustrated by the diagram which I shall place upon the blackboard. All of the so-called improvements in closure have been devised with reference to obviating this difficulty. We have become familiar with the scheme of stitching, first peritoneum to peritoneum by continuous suture of some animal material, and of then stitching fascia to fascia, muscle to muscle, connective tissue to connective tissue, leaving all of the sutures buried. Another plan of treatment is that devised by Dr. Pryor, which is alluded to in the following letter:

New York, May 23, 1893.

Dr. C. A. L. Reed.

Dear Doctor: It was my intention to go to Detroit for the purpose of discussing your paper on "The Management of the Abdominal Incision," but I am prevented doing so by illness. I am so much interested in the subject that I venture to make myself known to you. Some years ago I read a paper on the "Prevention of Ventral Hernia after Abdominal Section," and described a new operation which I advocated as also applicable to the radical cure of hernia which had resulted from celiotomy. Since I published that article my procedure has been employed a number of times by Drs. Krug, Cleveland, Sims, and others. It is my intention to read a paper on this subject this fall. Suffice it now to say that the operation as I originally performed it is modified as follows: silkworm-gut is used as suture material; the knots are tied and the ends cut short, for the sutures are not to be removed. The skin and fat are left open, and the fat is pushed back a little way from the underlying fascia. In this way the granulations which spring up are of connective-tissue origin, and the offspring takes on the characteristics of the parent tissue. The dressing is of iodoform gauze, and should not be removed for a week or ten days. The new-formed tissue will then have been found to have buried the sutures under at least an inch of granulations. Care is taken not to disturb these granulations, lest the attention of the plasma cells be directed from their function of tissue-formation to combat an irritant in the form of a mechanical foreign body, chemicals, or cocci. Under this method the tissues produce plasma cells only of connective-tissue forming tendencies, and there results a most firm scar, which scar presents the characteristics of all fibrillar tissue spun from plasma cells when protected—namely, it contracts within a few months to but a third of its original length. Manifestly, hernia through such a mass of the body's most firm tissue must be impossible. The silkworm-gut is used and not removed, merely because the suture must be of such a character that it is not necessary to disturb the granulations to remove it. I commend the procedure to your attention. Kindly send me your article.

Very truly yours,

W. R. Pryor.

The usual method of closure, and one which I believe to be best, is that of through-and-through interrupted suture, the silkworm-gut being used as the material. But while this is the usual method, I am forced to admit that it is frequently applied in a very

defective way, which I can illustrate by diagram better than by words. Permit me to place upon the blackboard these two sketches: one illustrating the proper method of applying the suture, the other the improper method. By reference to the former you will observe that where the sutures are passed directly through and near the edge of the incision that the margin of the fascia is frequently missed entirely, and when it is passed squarely through at a point varying from a half to three-quarters of an inch from the edge of the cut, although the fascia may be incorporated in the stitch, the margins are not approximated when the suture is tied. In still other instances the needle is inserted into the peritoneum near the margin of the wound and is brought out through the integument at a point varying from a half to three-quarters of an inch from the cutaneous edge. When such a suture is tightened the pressure comes upon the integument and the frail adipose tissue, while practically no traction whatever is exercised on the fascia. To my mind, the proper method of suturing the abdominal incision is as follows: carefully sterilized (boiled) silkworm-gut is the material employed. Smooth nickel-plated needles are used, one upon either end of every suture. These needles are as carefully sterilized as any other instruments employed in the operation. New and smooth ones are insisted upon because any inequality on the surface of a needle may be a convenient means of carrying infection into the tissues. This becomes not only an obvious but a demonstrated danger when needles are passed from the integument into the subjacent tissues. The possibility of elements of infection remaining upon the surface, even after thorough cleansing, should prompt us to avoid using our needles as a means of transporting such elements into positions where they can inaugurate suppuration. My sutures are passed first upon one side and then upon another by introducing the needle through the peritoneum near the margin of the wound with an outward inflection at an angle of practically forty-five degrees to the plane of the peritoneum. The point of the needle is carried half-way through the abdominal wall at this angle and is then changed in its course to almost the reverse angle and is brought out not more than a quarter of an inch, and frequently less, from the cutaneous margin. These sutures are passed at intervals of three-eighths of an inch. After they are all inserted, I take hold of the ends in a bunch and bring the walls of the incision together.

I take particular pains that the serous surfaces of the peritoneum are approximated, and then, beginning above or below as may be convenient, tie the sutures one after another. I endeavor to so tie them that the pressure will not give rise to depression externally, and I always tie the knot to one side of the line of the incision. The result of this method of suturing is, first, that I secure traction upon the aponeurotic structures, where traction is most needed —these margins being thus easily held in approximation; next, I relieve the fat of that pressure which frequently induces necrosis; third, I give my patient a comfortable wound; fourth, I spare her the danger of subsequent mischief which may arise from buried suture material which is frequently not absorbed.

It is not proper for me to close this brief paper without alluding to the dangers which may arise and which do frequently arise from injudicious dressings after the removal of the sutures. It is customary to apply a series of adhesive strips. I have seen three strips applied very tightly, binding down a very considerable compress immediately over the line of the incision. This, I am sure, is a very pernicious practice, and one which results in impairing a union which may previously have been very satisfactory. As may be seen from this sketch, the tightly drawn adhesive strips will corrugate the superficial structures, which, with the direct pressure exercised by the compress, has a tendency to separate the internal margins.

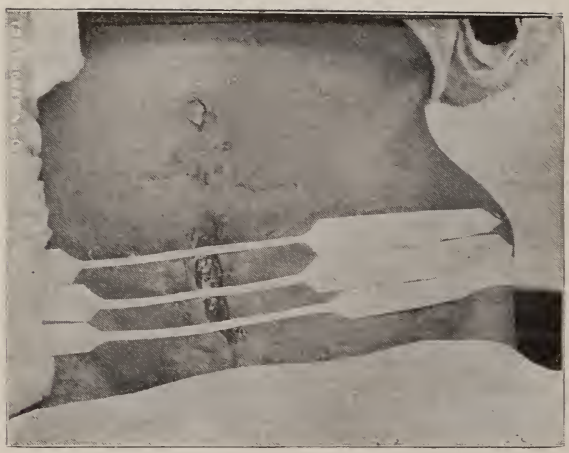
In conclusion, and by way of apology for having presented such a thoroughly elementary paper, permit me to say that from the standpoint of primary principles it has been my desire to present a plea for cleanliness, for simplicity, and for efficient precautions against those accidents which frequently mar results upon which we might otherwise reflect with pride.

DISCUSSION ON THE PAPERS OF DRS. LONGYEAR AND REED.

Dr. James F. W. Ross, of Toronto.—Mr. President: I was not here during the first part of Dr. Reed's paper, but I entirely agree with what he has said as to the necessity of cleanliness in these cases. Prevention of sepsis is one element in securing absence of hernia subsequent to operations on the abdominal wall.

I heard a part of Dr. Longyear's paper, which I understand is also under discussion, and I may say that I do not agree with him in many of the points advanced, more particularly with regard to the buried suture, for I believe just as good results can be obtained by means of the ordinary suture as ordinarily applied, as are reported to be obtained by the buried suture, and with a great deal less trouble. In my work I have been particularly careful to pick up the fascial ends, as already explained by Dr. Reed, and to bring them closely into approximation. I suppose this is theoretically correct. What the practical result really is I do not know. I do not know, as I said in a discussion a year ago, that it has been positively proven that fascia grows to fascia and muscle to muscle in the scar that is subsequently left. This has yet to be demonstrated. Even if we have a perfect scar, we may still have ventral hernia.

A few days ago I had a perfect demonstration of the bad effects of the drainage-tube in producing abdominal hernia. I operated on a case, put in a drainage-tube and left it for twenty-four hours. When I removed it the woman complained of pain that I could not account for. She had a troublesome cough, and no distention, but she did have some slight elevation of pulse. I was much amazed about the third day after removal of the drainage-tube to find lying on the abdomen a large piece of omentum, evidently constricted and inflamed, pressed out of the drainage-tube tract. This annoyed me considerably and gave me a good deal of anxiety. I removed it by suture and left the remaining portion just inside the abdominal wound. I think we can have no better example than this of the tendency to hernia after the use of the drainage-tube. The drainage-tube, however, must be used in many cases, and, therefore, we may have hernia following its use. There is no way of preventing it, but the tube should be small. Sloughing sometimes accompanies cases of operation for hysterectomy where the pedicle is outside of the abdominal wall, and these are occasionally accompanied by very large herniæ.



About two months ago I saw the case of a woman who had been operated on for ectopic gestation at full term. She had a large suppurating wound after the operation at the site of the clamp. I had not seen her for three or four years. She came into my office with an enormous ventral hernia, undoubtedly due to the fact that the pedicle was left in the wound exactly as the drainage-tube is, and had produced hernia as the drainage-tube does. I do not wish any better suture than silkworm-gut, and I agree with Dr. Reed as to the way it should be applied. I think a great deal of trouble in wounds is due to the fact that the suture is drawn too tight, and that there is too much tissue included. The needle should come out near the edge of the wound—not at a distance of two or three inches from it. I understood that Dr. Reed was to bring forward some cases from whom he removed the animal suture after it had been inserted some time. If so, he will have proved that in some cases the buried animal suture does not fulfil all the expectations that we are led to believe it will.

I have also noticed another condition giving rise to hernia. I think hernia is liable to be frequent after operations for acute peritonitis. It is a rare thing to have complete union by first intention of the wound after operations for acute peritonitis. The fluid discharge from the peritoneal cavity irritates the wound, and for the first two or three days after operation the capillaries for some distance around are seen engorged and inflamed, evidently as a result of the septic contamination of the wound. I now have a case lying in the hospital at home, in which the wound reopened and the intestine could be seen bare beneath the surface, all filled up by granulations. I expect the young man will have an enormous hernia. (Case since photographed: see Plate, taken from *Canadian Practitioner*, June, 1893.)

Dr. George F. Hulbert, of St. Louis.—I do not think my friend Dr. Ross, after seeing a piece of omentum come through the drainage-tube tract, will be willing to cease the use of drainage-tubes, or will be willing to consider it of sufficient importance to guide us in what we should do in preventing hernia and the way we should unite the tissues. It was simply a unique accident, and I would not be surprised if during the rest of his natural life he fails to meet the condition again.

The point, in the union of the abdominal wound, to my mind simply consists in making as nearly natural restoration of the damage that we have done there as possible. It is simply coaptation of tissue, and if we succeed in properly making such coaptation there is only one other condition that can be the cause of ventral hernia in the future, and that is infection. It is true that too frequently we hear the drainage-

tube blamed as a cause of ventral hernia. There is not a particle of doubt in my mind that if we blame the drainage-tube itself we are mistaken. If we will concede that it is possible for infection to take place where the drainage-tube is situated, then we can account for the ventral hernia simply from the standpoint of infection, and the drainage-tube in and of itself is not the cause of the difficulty. Furthermore, we often meet conditions in which we are obliged to leave open the abdominal incision to some extent; many instances may arise during a celiotomy, or at the close of it, in which we have no time to unite the tissues as nicely and neatly as we would like to do it. We are hurried. If we keep infection out of the wound we can have granulation without suppuration. We can have material presented in the incision whose tendency is toward the formation simply of connective tissue. The element in the whole process, in order to make it a sure thing, is the prevention of infection. I have never known ventral hernia to follow my celiotomies. I do not say it with any egotism, and I am satisfied in my early cases that it was purely a matter of luck that I did not meet this secondary complication. If we have tissue brought to tissue of like character by the buried suture or any other suture, if the coaptation is accomplished, we are not going to have resulting ventral hernia. Where we leave the wound open and can have it heal by granulation without suppuration and infection we are not going to have ventral hernia. I am satisfied that in the use of the drainage-tube, regardless of its size, if we can keep infection out of the wound, we shall not have ventral hernia. The two things, then, in my opinion, that produce ventral hernia are simply want of proper coaptation and infection.

Dr. J. Henry Carstens, of Detroit.—The discussion of these papers illustrates how great minds run in different channels, and in having this subject brought before us we are simply pleading for more accurate surgery. It is not the question of doing a particular kind of work, but of the technique and perfect manner in which it is done, and so leaving our patients in good condition. Dr. Longyear and myself have in the course of time evoluted out of the method of suturing layer by layer, leaving simply the skin to be sewn with silk or silkworm-gut, until a year ago when Dr. Marcy showed me how to unite the skin with the buried suture. Since then I have used his method with good results. Before that, when I used the buried animal suture and brought it out at the skin, the result would be suppuration. I could not keep the animal suture clean when outside of the wound. (Here Dr. Carstens demonstrated on the board his method of using the buried animal

suture.) There is no scar tissue formed. I do not think scar tissue is strong. I think it is abnormal tissue, and you will have no scar tissue if you use the buried animal suture in suturing. All of the cases I have had trouble with were abdominal hysterectomies in which I had used the clamp in order to save time, and where I wanted to stitch the stump in the lower angle of the wound I used silkworm-gut. Instead of using it at the upper end I put in a couple of big sutures, and in three of the cases I got hernia. In all my ordinary cases I have only one where there has been hernia. Even when we have stitch-hole abscess it is due to sepsis and inaccurate adjustment of the parts. Dr. Reed has made a plea for the accurate adjustment of the cut surfaces, which is an excellent one for the use of the buried animal suture. I could not make as good a plea for it. If we take small sutures we can do the suturing in a few minutes without any trouble. Even if it takes eight or ten minutes I think the patient can afford to stand the time. I plead for quick and rapid operations, but for the future good of patients, taking a little longer time with the buried animal suture is worth something. Witness a patient walking around and wearing a great big pad like Martin recommends and uses! Our American women will not stand it. Sometimes we have hernia after using the buried animal suture, but I can show today a dozen women in which this suture was used and they have no hernia. I think if Dr. Ross will try it, he will never do without it.

Dr. L. S. McMurtry, of Louisville.—Did you ever have a case come back to you where the buried animal suture did harm?

Dr. Carstens.—No.

Dr. McMurtry.—Have you seen it absorbed and disappear?

Dr. Carstens.—Yes.

Dr. Ross.—To what is stitch abscess due?

Dr. Carstens.—Due to lack of antisepsis.

Dr. Ross.—Don't you think it is due to pressure?

Dr. Carstens.—No. Why should it be due to pressure more than anything else?

Dr. Carstens (resuming).—I now always use kangaroo tendon. Formerly I used silkworm-gut. On account of the unreliability of the catgut as purchased in shops, I frequently had stitch abscesses until I found a method of carefully preparing the catgut myself; then

I had better results, but after reading about kangaroo tendon I thought I would try it, and I did so. I find that it will remain for three or four weeks unabsorbed and strong, while catgut becomes absorbed in four or five days. If the patient gets up in a week or ten days the union is not strong unough, and the result is you may have hernia if you use catgut. The kangaroo tendon will hold the wound perfectly solid for four weeks or more, and in the meantime Nature makes the wound so strong that there will be no trouble.

Dr. George H. Rohé, of Catonsville, Md.—I am in entire sympathy with the claim that we should make our technique perfect, but I am not prepared to admit that everything untoward that happens after an abdominal section is necessarily due to imperfect technique. If it is, I am not at all prepared to admit that we can make our technique perfect.

Dr. Reed has clearly pointed out the dangers in the abdominal integument, and I am quite sure he will agree with me when I say it is absolutely impossible to perfectly sterilize abdominal skin unless you dissect it down to the subcutaneous fat and put it in a steam bath or roast it. There are a number of depressions in the skin filled with hair and sebaceous material. The very thorough measures of disinfection of the skin Dr. Reed resorts to absolutely fail in thoroughly sterilizing the depths of the sebaceous glands and hair follicles. I have seen some abdominal work done by one who is considered the best abdominal and pelvic surgeon in this country, and I do not think there will be any disagreement when I say I refer to Dr. Joseph Price. I have also seen some work done in the abdomen by men who are not Prices, and if the presence or absence of a ventral hernia depends upon perfection or imperfection in the closing of the abdominal wound, I cannot understand why a great many more women operated upon do not have ventral hernia. I think we must trust to luck to some extent, as has been said.

Dr. Carstens.—Not luck, Doctor—science!

Dr. Rohé (resuming).—I desire to call attention to one point, namely, that the buried suture, for which I have a predilection theoretically, although I have never used it, is an improper suture to use unless you have the margins of the incision perfectly aseptic. If you have septic material brought in contact with these margins you cannot possibly get them perfectly aseptic. You can apply disinfectants and destroy the septic material, but if you do that you destroy the tissue of the wound itself, so that in absolutely and securely closing the

wound, layer by layer, you include more or less surface in the incision that has been made septic by the material that is brought in contact with it, or that has been injured by the disinfectant. If you close it and the tissues fail to resist the destructive action of these agents, you would have more trouble with the buried suture than with a suture going through from the outside.

Speaking of suture material, it occurs to me that thoroughly sterilized silk would be just as effective and less harmful than any material we can get. I am absolutely incredulous of thoroughly sterilizing catgut in any way. That kangaroo tendon or any tendinous material may be sterilized, if properly prepared and not twisted so as to include septic material within the folds, is possible. It is less likely to be sterilized than silk. Silk you can boil as long as you please without injuring it.

I would like to ask what results have been obtained in operating upon post-operative ventral hernia. I have never seen a case operated on. I have a case that came into my hospital last week, where a hernia resulted from an operation done two years ago, and I expect to operate upon it. I have had no personal experience in this regard, nor have I had the opportunity of learning whether the results of operations upon post-operative ventral hernia are successful.

Dr. M. Rosenwasser, of Cleveland.—I rise simply to answer the question of Dr. Rohé in regard to the success obtained by operations upon post-operative ventral hernia. I have had one case of post-operative ventral hernia that had been operated on twice. The first operator removed a cirrhotic ovary. It was about five years ago. An incision was made from umbilicus to symphysis. The surgeon would not operate in the dark; he wanted to "see" what he was doing. In sewing up the incision he took particular pains when he ran his through-and-through stitch to bring peritoneum against peritoneum. Instead of allowing the edges to lie in apposition, he brought the peritoneal surfaces together in the wound. The case two years later fell into the hands of Dr. E. W. Cushing, of Boston, for operation. He sewed up layer by layer, went in between the skin, fat, and fascia above and below, and brought the tissues in apposition; in short, he did the operation as Dr. Marcy recommends. Within a year afterward I operated on the same patient for post-operative ventral hernia. I followed the same procedure, sewing up the parts layer by layer. The patient today wears a truss, and the result is not perfect. There is a slight defect in the cicatrix, and in order to prevent it from getting worse she wears a pad.

Dr. Henry Howitt, of Guelph, Ontario.—I am very much pleased with the papers. Dr. Ross and others have stated that the drainage-tube is to blame for a good many cases of hernia following abdominal section. I believe a drainage-tube may be used without running any extra danger from hernia following. When that stage in the operation has arrived where the drainage-tube should be inserted, I merely pass the forefinger of my left hand into the abdominal cavity and grasp the rectus either on one side or the other, in such a manner as to make its tip prominent on the abdominal surface in the linea semilunaris; then with a scalpel I perforate the wall over the point of my finger. I then take a Sims sinus forceps and dilate the perforation sufficiently to introduce a glass drainage-tube. By adopting this method the median wound may be completely closed, dressed aseptically, and less danger incurred from hernia following. The incision through which the drainage-tube passes is too small to permit of hernia resulting afterward.

Dr. Oscar S. Armstrong, of Detroit.—The question of using the buried suture or of using the old form of suture resolves itself into: which is safest and best? I have been in the habit of using the method that Dr. Carstens has spoken of—that is, of suturing the peritoneum first, and then using a separate suture to unite the fascia, the fat, and skin. My results have been good. I have never made but two celiotomies in which I have used the single suture, because I have been a little afraid of it. I have had good results with the other. If it can be substantiated that the method advocated by Dr. Reed is a better and safer one, I think it is unquestionably the method to use, because it takes up less time.

In reply to Dr. Rohé's question as to the results of operations for post-operative abdominal hernia, I have had two cases come to me for operation. The first was a rather unfortunate one, the patient dying from the anesthetic on the operating-table and before the operation was commenced. The other case that came to me was the result of another surgeon's work. The second case was one of my own, in which I had removed a large ovarian tumor about a year previously. I had closed up the abdominal incision, closing the peritoneum singly, then the fascia and skin. I used a drainage-tube, and it was allowed to remain in for a great length of time, owing to the fact that there was rupture of the ovarian cyst when being removed. The cavity was flushed out. There were a great many adhesions and much broken-down débris. The patient returned in a little less than a year afterward with a large ventral hernia. I operated on her about the middle

of November last. I may say to Dr. Rohé, that if he has never made any of these post-operations for hernia, they are the most tedious that the surgeon ever undertook. The patient in question was under the anesthetic for a little over two hours, and several times during the operation I was at the point of giving it up and saying to the class that it was impossible to complete it. By persistence and perseverance, however, we completed the operation. I have not seen the patient for two months, but when I saw her last the operation was a perfect success. Her recovery was uninterrupted and uneventful following the operation.

The President.—This subject is one of great interest, and before the discussion is closed I desire to call attention to one or two points in connection with it. In the first place, we all concede that the great desideratum in closing the abdominal incision is to avoid stitch-hole abscess and ventral hernia; in other words, to adopt that method which is the cleanest and guarantees us rapid, prompt healing of the wound, without separation of the edges, and that will prevent separation of the muscular layers so as to allow the contained viscera to protrude through the abdominal wall afterward. In order to see what are the facts in the production of these conditions, it is well for us to look at the record and history of these operations.

Among the first abdominal sections that were done were thirteen operations by McDowell, with eight recoveries. He reported them honestly and faithfully years afterward, and had no ventral hernia. He sewed up the wound with shoemakers' thread. The old operators used silk in closing the abdominal incision. We know that it does not make as good a suture as silkworm-gut on account of its capillarity. It is a material that becomes foul, and stitch-hole abscesses are liable to occur. A great many operators in the early days, such as Sims, used silver-wire sutures. If you examine the results of the early operators you will find that ventral herniæ were no more common than at present. There were good operators in those days. Some of the same men are operating to-day. The first 500 of Price's operations, and Tait's and Bantock's, were all closed with the silk suture. They may have had stitch-hole abscesses more frequently than now, but as to ventral herniæ they did not have them more frequently than at present.

Dr. Longyear quotes Dr. Price as saying that he has "5 per cent. of ventral herniæ following his operations." In my own experience ventral herniæ have occurred without any relation whatever to the kind of suture that was used, but almost invariably in connection with

large tumors, or those conditions where the abdominal walls were thin and stretched. The last ventral hernia that I had was in a woman seventy-two years of age, for whom I did an ovariotomy last November for a very large tumor. There was great distention and thinning of the abdominal walls. I am sure I never had more time, or a better opportunity and disposition in my life to close the abdominal incision thoroughly and carefully than in this case, and I do not believe I have ever done it better. I have never known a wound to heal more perfectly with all aseptic conditions. The patient was kept in bed for three weeks, until organization was perfected, yet in about two weeks afterward she returned with a ventral hernia.

Dr. Longyear.—What kind of suturing did you use?

Dr. McMurtry.—The same kind of suturing as described in Greig Smith's work. The approximation, organization, the healing, and the relation and condition of the parts for a long time afterward were the same as they would be with any kind of suture. The abdominal walls were very thin and distended, and I believe this is an important factor.

Another point: there are very often cases of emergency operated on, as cases of ectopic gestation, where the operator is compelled to fight against time in closing the abdominal incision. The patient's life may depend upon abbreviating anesthesia as much as possible. She is hurriedly put to bed, surrounded by heat, and the suturing is done with great rapidity. In such cases I do not think ventral hernia is any more frequent than where we take ten or fifteen minutes to close the incision. In one case I recall now, a woman was put to bed after a three-and-a-half-inch incision had been made in the abdomen; I put in no stitches, and the clamp and iodoform gauze were sticking out of the abdomen. Adhesive strips were used to bring the surfaces together. That woman has a good, firm abdominal wall. It is not the suturing particularly that predisposes to hernia, and should not be regarded as the prime factor in its production. I do not want to be misunderstood; I want to say that every effort should be directed toward a nice approximation of the abdominal wall, with careful suturing done in a skilful, surgical manner, with part to part nicely adjusted. Those gentlemen who have used the buried animal suture say they can close the incision in five or six minutes. Very few operators can do that.

Another point in confirmation of what has been said: in a hysterectomy which I did for a large uterine myoma (I am narrating this in order to allude to Dr. Carstens's own experience in very large tumors),

the tumor had grown rapidly within four years in a woman over fifty years of age, with lower extremities swollen, suffering from pressure, and extremely emaciated. I did a hysterectomy and had the good fortune to have a small pedicle, which was fixed in the lower angle of the wound. There was nice healing of the tissues, but a ventral hernia appeared at that point. The abdominal walls were very thin.

These experiences bring us inevitably to the conclusion that there is something else to be considered in the production of ventral hernia besides the suturing. If hasty suturing of the abdominal wall and disregard of the nicest precision and accuracy in the adjustment upon part of it predispose to hernia, how many herniæ would there be today post-operative in this country? Those operators who have done a great deal of pelvic work have just as large a number of cases of ventral herniæ as those who have done a moderate amount of it. A man who has done a thousand abdominal sections will have as many cases of ventral hernia in proportion to his operative work as the man who has operated but a hundred times, showing that there is something in the particular case and abdominal walls before the operation is done that predisposes to ventral hernia.

As to the point made by Dr. Ross, I am sure that he did not mean to imply that because he found a piece of omentum in the tract of the drainage-tube he would discard its use. It is the first time that he has known such an accident to occur, and he has done hundreds of abdominal sections. I have never heard of it before. So it would be very unjust to imply that the drainage-tube is the cause of ventral hernia very often on account of that particular accident. Another point in this connection: those who use the drainage-tube continually and most frequently do not have more cases of ventral hernia following their operations than those who use it very seldom. There is a great deal in knowing *how* to use the drainage-tube. When it is properly adjusted and the suturing is done with a view to the presence of the drainage-tube, and allowing the abdominal walls to come together nicely afterward, it is not a factor of great moment in the production of ventral hernia. One important cause predisposing to ventral hernia independent of suturing is in allowing patients to get up too early. It is a mistake. It makes no difference whether accurate suturing is done with kangaroo tendon, catgut, silkworm-gut, or anything else, we can only do one thing, and that is, by the suture material bring the parts accurately and neatly together. Nature is to do the rest with one kind of suture as with the other. When the parts are brought together it takes a number of weeks for complete consolidation, and I do not be-

lieve any suturing can compensate for allowing the patient to use the abdominal muscles too early, thus predisposing to ventral hernia.

Dr. Ross.—The case of which I spoke, where a piece of omentum protruded into the tract of the drainage-tube, is the only case of the kind I have ever seen. The abdominal wall was one of the thinnest I have ever sutured, and we had the greatest amount of relaxation, so that I attributed the occurrence of hernia to the relaxed condition.

Dr. Longyear (closing the discussion on his part).—I am very much gratified at the liberal and free discussion elicited by my paper. I expected some criticisms on the use of the buried animal suture, for the gentlemen who have never used it really do not know anything about it, and those who have condemned it today say they have had no personal experience with it. Those who have used the method of suturing *en masse* dread to deviate. They have become accustomed to it. They do not like to "switch off," so to speak, on to anything else. It is a natural feeling, and is to be expected. I have not heard one gentleman who is opposed to the buried suture say today that he has given it a fair trial himself. I think that is the test.

I was much pleased with some of the remarks made by Dr. Reed in his paper. The point he makes of doing injury to adipose tissue is of great importance; the bruising and rolling up of the fat, producing necrosis of that part, cannot help but interfere with healing by first intention. The finding of the linea alba by the method outlined by Dr. Reed is a good point, and I shall endeavor to apply it in the future. It has not been my good fortune to go directly in the centre as he does. Very often when I cut down I find the edge of the muscle; I push the muscle one side or the other, and then go close to the median line.

There has been nothing said by the gentlemen who have spoken against the buried suture about the time element in union of aponeurotic tissue. The time element of great importance. You cannot get union of fascia in the same time that you can skin and peritoneum. At the end of ten days even skin is not firmly united. You can separate it with your finger by a little force, and, as a rule, fascia and other bloodless tissues take much longer time. You take the stitches out at the end of ten days and any force may start separation.

Some of the gentlemen speak of the difficulty of completely disinfecting the skin as an objection to the use of the buried suture. This objection certainly holds good with the *en masse* suture, as this, by passing through the epidermis, is liable to drag septic germs into the deeper structures; but the use of the buried suture avoids this danger,

as the epidermal layer is not touched by this method. Even if the *en masse* suture does not immediately drag septic germs into the tissues in this manner, it acts as a track for their passage during its continuance in the tissues, and at last may drag germs in when it is removed. The aseptic buried suture, once in place in an aseptic wound, and sealed, will remain aseptic, even if the epidermis above it is full of dangerous germs.

An important point not brought out in the discussion is the use of external stitches with buried stitches. This is dangerous practice. You have an aseptic wound; you do not sew the skin with the buried suture, but pass in external stitches among buried stitches, and thus make a track for the passage of pathogenic germs and hence infect your wound, the danger continuing until, and being greatest at, the time of their removal.

Some of the gentlemen say that ventral hernia cannot be very common. Think of Dr. Price having operated on over one hundred cases of ventral hernia occurring after abdominal section! Where did they all come from? A good many cases are not operated, patients dreading the operation. I know a number of cases in this city that refuse to be operated on; they would rather wear a truss, and "bear the ills they have than fly to others that they know not of." Their confidence in the ability of the surgeon to make them whole has been tried over and over, and they don't care to experiment again.

Dr. McMurtry said in his case, where he had hernia, the approximation was all right. He had a thin abdominal wall, and he approximated it to the best of his ability with the *en masse* suture. It is probable that the ends of the fascia were not approximated, that there was something between them, or they may have been doubled up, a thing which is apt to occur in the case of a very relaxed abdominal wall. Besides, the fascia will not unite firmly for a long time, especially if not approximated edge to edge. The man who does a thousand celiotomies and has as many hernias during the latter part of his series as he had during the first one hundred, or as the man who does only a hundred operations, must be following constantly the same method. It is probably because he uses the *en masse* stitch and has not "switched off" to the buried suture. We should not be afraid to deviate a little from the beaten path when the end to be attained is so important.

I think most of the other objections have been answered in my paper, and I must again express my gratification at the instructive discussion on this very interesting, and to my mind extremely important, subject.

Dr. Reed (closing the discussion).—I deviate more from the beaten path of suturing the abdominal wound than any man in this room, making the assertion at random.

Let us review certain points brought out in this fruitful and important discussion. The first thing that impresses me is the fact that hinges upon the production of every ventral hernia. There are a number of other complications that deserve consideration and induce me to prescribe precautions against their occurrence—namely, mural abscesses, and abscesses in the line of incision, stitch-hole and otherwise. The aseptization of the integument is a thing of which we can never be sure by the employment of the detergent agents to which I have alluded. The application of saponifying material afterward, and the subsequent application for a considerable time of strong antiseptic solutions, make me approximately sure of the condition of the cervix, and the passage of the suture from within outward is another point.

In one of my cases I used the kangaroo tendon, obtained from Dr. Marcy, and employed carefully after his method and as I have seen him do it. I overstitched the peritoneum, then the next layer to the fascia, and then I overstitched the next layer of fascia, etc., and next incorporated the fat with a carefully applied stitch not tightly drawn. Finally, I had a complete buried suture. It was simply the finest-looking surgery that a man can contemplate. But what happened? The patient had a chill, followed by a fever, and then a sweat. The parts got red and began to bulge, and I had to open up the whole thing. It is all-pervading infection. The entire wound is involved.

I had another case of that sort in which I applied the suture satisfactorily. The patient went away, and came back with a painful cicatrix. By carefully examining her I found deep-seated indurations, and I have not made up my mind as to what to do with her. I think it will be necessary to close her up in the good old-fashioned way.

I have heard of the sutures being applied by other careful operators, men careful in their preparations, cleanly in their methods, and I have heard of just as much mischief as falls on my hands. I have seen mural abscesses resulting from the introduction of infection by the animal suture. Will somebody tell us why it is so easy to sterilize kangaroo tendon, and yet so difficult to sterilize other suturing materials? I, for one, have a lack of confidence in the safety of the animal suture. I have no objection to the method. I do not care how the suturing is done; it is not specially difficult to apply the continuous suture. Its technique is easy, but it is a material that I fear. If it is a carrier of infection, it is a breeder of infection, and it is in view of these facts a

much more dangerous material than is silkworm-gut applied after the Greig Smith method. There is one other point that occurs to me regarding the production of ventral hernia in connection with the use of this suture *en masse*. I have not had enough experience to lead me to a final conviction, but I have had some suggestive experiences bearing on the particular point in technique. I have had several cases of ventral hernia that were not post-operative, and in each of those cases I have found that the central pathological condition was not separation of the fascia, the deep or superficial aponeurotic structures, or separation of the linea alba, but displacement of the recti muscles, so much so that the space in one place between the recti muscles was eight inches.

It occurs to me that where we have demonstrated, as in the two cases to which I have alluded, that the recti muscles play an important rôle in the production of ventral hernia, it is rather important in the process of repair that we have these structures so united that they will stay at home. I do not believe that the aponeurotic structures are the only retention structures of the abdominal wall, and I have been forced to this conviction by observation of the cases to which I have alluded.

CENTRAL LACERATION OF THE PERINEUM: CAUSATION AND PREVENTION.

By J. C. SEXTON, M.D.,
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Of the many mishaps of childbirth, no single one is so common as laceration of the perineum. The many degrees and varieties of this accident, the many and diverse methods which have been suggested for prevention, the large number of operations that have been perfected for the successful treatment of the lesion, are so familiar, that any additional suggestions that now come to us are not infrequently superfluous and have already been better taught by someone else.

It is with not a little diffidence that the writer attempts to even interest the Association, in presenting for its consideration one form of laceration of the pelvic floor.

In reviewing the cases of laceration of the perineum that have come under my immediate care, one is of such interest that I have made it the subject of this study.

The patient was a young primipara in whom there was ample pelvis and extra strong labor. The perineum was rather broad and apparently normally developed. After being well advanced into the second stage, the head in the left occipito-anterior position, it was soon apparent that delivery was dangerous, owing to the failure of the head to extend, and unusual stretching of the posterior perineum. Central perforation threatened. Ordinary manipulations failing to cause the head to extend and to glide forward, chloroform was pushed and an attempt made to lessen the force and rapidity of the contractions by its use, but the effect was disappointing. The chloroform was then withdrawn, the woman turned upon the left side, her fixation of chest and auxiliary muscles resisted. All supports about her hands and feet were removed,

and, with the thumbs applied to the presenting part at the sides of the perineum, just anterior to the tip of the coccyx, firm pressure upward and forward was attempted, but without appreciable effect. Fearing to increase by reflex excitation the force of the labor, no pressure or support was given to the perineum directly, although it soon became dangerously thinned. Pressure of the occiput, with the maximum intensity, came upon the posterior perineum just at the anterior border of the anus. The patient would cry out, in the agony of the pain, that she was bursting. She was again placed upon her back and an effort made to hold back the head by direct pressure with the thumb in the vagina and two fingers in the rectum. This effected some little retardation, but would only take the extreme pressure off the perineum. During all this time no extension whatever had taken place, and now there seemed to be no recession between the pains, but continuous pressure of the presenting part into the soft tissues that stood out rounded and bulging. The perineum was distended to an extreme degree in its posterior or inferior segment, while the anterior or superior half was hardly stretched at all. No advance having followed from our efforts, the parts becoming dry and dusky red, as well as excessively tender, she was placed profoundly under chloroform, the short forceps applied, and the head gently lifted and extended. Before the instruments could be removed, the strong labor forced head and forceps through the vulva, lacerating the undilated perineum for half an inch. The instruments, unfortunately, were not very well patterned, and I fear the laceration was caused by their points beyond the tip of the chin.

The slight laceration was repaired at once. Her recovery was perfect, although for many days the perineum was discolored and swollen as if it might at any time suppurate. There was also some bloody oozing from the rectum for five days, during which time the control of the sphincter muscle was lost.

This form of laceration, in its different grades or degrees, while not common, occurs more frequently than is generally supposed. The tear may be confined to mucous surface only, or it may be a split or crack of the external skin (Matthews Duncan, *Transactions American Gynecological Society*, 1876), or again, what more frequently happens, may be overstretching or separation or spreading, if you will, of the meshes of the pelvic fascia. The evil conse-

quences of stripping off the vaginal mucous membrane from its base upon the pelvic fascia, the spreading of the fibres of the fibrous sheath of the posterior vagina, are seen in the rectoceles and anterior hernias of the rectal wall, and "lead to prolapse of important organs, general sagging of the pelvic floor, and cruel dragging, all the result of tissues stretched or weakened in labor." Many of our failures to cure, by plastic operation, posterior prolapse are due to the weakness of the fibrous framework. The causes of central perforation may be classed under two heads, to-wit: defective or abnormal development of the perineum or pubes, and second, anomalies of the expellant forces and positions of the vertex.

Defective or abnormal development of the perineum may consist of changes in the arrangement of the muscular structure, of lack of development and consequent weakness and thinness of the pelvic fascia, abnormal length or direction of the coccyx, or abnormal location or direction of the lower rectum and anus. Again, abscesses or fistulæ at some former time may have caused lasting injury to the integrity of the tissues, thus causing central rupture by giving way under pressure. Witness the following: Miss I., one year before marriage, had quite a large abscess of the perineum, which, on account of false modesty, was allowed to run its course, was not incised, and subsequently discharged into the vagina as well as externally. Healing took place and she was fully restored. Afterward married and became pregnant. She was attended in labor by a friend of mine, who told me of the unnatural hardness of the perineal body and its lack of elasticity. She sustained a very considerable laceration of the anterior perineum, and the cicatrix of the abscess opened so that a fistulous opening into the vagina persisted for some time after the anterior wound had fully healed.

Defective development is also illustrated by another case wherein the perineum was faulty from an anomalous transversus perinei muscle. My friend Dr. John Moffett, in whose hands the following case occurred, assures me of the correctness of his observations. His patient, a primipara, who had a normal pelvis, had been only a short time in the second stage of strong, vigorous labor, when the perineum opened centrally. Simultaneously the membranes ruptured and the liquor amnii escaped through the rent. "At first the opening allowed the passage of the index finger. Labor went

regularly until completion; the child being allowed to escape through the artificial opening, tearing the perineum behind to the bowel, leaving a small isthmus at the anterior commissure. Upon putting up the torn tissue, which was done immediately, the discovery was made that upon one side there was no transversus perinei muscle, but in its stead a band of fibrous tissue, very hard and unyielding, that had parted from its insertion at the central tendon."

His statement as to the condition of the perineal structure is confirmed by his assistant, Dr. William A. Pugh. It may have been pressed upon more than was thought by the Doctor, for it could not yield, and consequently would not give evidence of being pressed upon until the pressure was great enough to distend the entire perineal body. The report states that the rupture occurred at the apparent beginning of distention and not at its acme, as might be supposed. Quain admits that the muscle is subject to many variations, but this condition is not mentioned. Heath thinks the muscle is divided into three fasciculi, and any variation of insertion would, of course, weaken the tissue it is intended to brace. Such a rupture would be apt to take any man when off his guard, for it it may occur so early, and the damage may be done even before we suspect that it threatens.

Again, abnormal length of the perineum favors posterior or central rupture, as is conceded by all obstetricians. Many of us, I am sure, have seen cases where the perineum was unusually long, and the fourchette so close to the symphysis that it was painful to the woman if not difficult for the obstetrician to insert two fingers into the vagina. Instead of the distance being one and one-half, it may be lengthened to four or five inches, and, in consequence, proportionate weakness in resistance may be expected.

Precipitate labor was the cause of a case of central rupture reported by Hodge, and a very large proportion of the cases have occurred in the occipito-posterior positions of the vertex. In studying the literature at my command, the etiological factors already enumerated are well supported. Reeve's case (*Trans. Amer. Gyn. Soc.*, 1878) was precipitate labor supplemented by a faulty posture at this stage—namely, stooping, semi-erect, squatting.

Dr. Reeve did not attend the confinement, but the report was from the patient herself, who stated that while out of bed, over the

vessel, she was taken with a violent pain, and had scarcely time to get back into her bed when the child was born. She was not aware of an accident, although this was her third labor.

Olshausen (quoted by Reeve) describes the intrinsic weakness very graphically by saying that the perineum "may be too yielding, too thin or membranous, as it is expressed. The consequence is, especially when it is at the same time too broad, that the head, instead of taking a direction forward, bores down into the perineum. The structure then envelops the head like a cap, and may finally, in consequence of too great thinning, burst." Dr. Reeve is inclined to object to this view on the ground that it is theoretical rather than practical, and, in fact, his case did not present a perineum more lax than usual. In the case that I have presented, however, this very state of things did occur.

In 1880 Mr. Robert W. Harley reported to the Dublin Obstetrical Society, a case in which he attributed the central rupture to the very flat and low pubic bone.

"All the force appeared to be directed backward, and the uteric contraction meeting the resistance of the low pubic bone, which prevented the forward sweep, drove the head right through the perineum at its posterior third. There was about one inch of the anterior perineum untorn, and while the laceration extended to the sphincter ani, that muscle was not injured."

The prevention of this accident is much to be desired, and the effect so deplorable, that the methods to be pursued in cases threatening central rupture are worthy of careful study.

If some anomaly of the expellant forces is at work, the effort to hold back the labor and to lessen the force of the contraction must be promptly and effectually made.

To prevent the pressure from coming too suddenly, and thus, in the language of Meigs, "taking the perineum by surprise," we can hardly expect to accomplish much if the patient is conscious. Under these circumstances, the admonition to her to relax the auxiliary muscles, and not to bear down, will be found to be utterly useless in all, or at least almost all, instances. Very few women can restrain the desire, even under direction, to cry out, to not hold the breath, and the greater number will not be able to withhold the force of the abdominal muscles. All supports should be at once removed, her hands should be freed, and she should be turned upon her side.

If the force can be mitigated in this way, little else may be needed. If, however, the labor be precipitate, these simple procedures will accomplish nothing. The head does not recede in the least, the pressure is constant, and anesthesia to a degree of absolute muscular relaxation may be tried.

It does not appear to be reliable, however, for if not skilfully administered it may increase rather than lessen the force of the labor. Anesthesia to the point of suspension of action of the uterine muscle is dangerous, and the skill of the ordinary nurse cannot be relied upon to carry it to the point of actual service, and not go nearer to the point of danger. As most of the cases seem to occur when the structure of the perineum itself is at fault, our greatest and surest hope of prevention will be found to be in our manipulative skill in guiding the direction of the head, and in guarding the perineum.

I have no wish to enter into the discussion of that overworked problem of supporting the perineum. The question to be solved, and the contingencies to be met when central perforation threatens, cannot come within the range of the support or no support theories, and however one may feel on this point in the ordinary cases, I am sure he will feel that he must do something when the posterior segment of the perineal body offers to give way.

Manipulation will accomplish the prevention in most cases, for, by using our hands with skill and knowledge, we can exert force upon the part to guide it forward, and, at the same time, retard to some extent the full force of the pain.

In cases of unusually long perineum, or loss of curvature of the coccyx, or other departure from the normal, intrinsically weakening the structure, the head descending in position of flexion, the presenting part, meeting the pelvic floor at right angles, does not extend, but begins to stretch the tissues. Having once indented or impressed for itself a concavity in the soft tissues, force from behind only increases, instead of alleviating, the unhappy condition.

This cupping or indenting of the posterior pelvic structure is also augmented by reason of—in certain instances, I suspect, is caused by —the up-rolling of the vaginal mucous membrane. Under pressure it becomes loosened from the fibrous sheath of the vagina and rolls on up before the advancing head. This up-rolling occurs behind the attachment of the transversus perinei muscle, even behind the

edge of the levator ani, and some force must be directed to lift the presenting part out of the depression it has made before it has time either to lacerate the posterior vaginal wall or perforate the perineum.

In a paper entitled "Vaginal Taxis," which he has kindly placed at my disposal, Dr. Dan Miliken, of Hamilton, Ohio, very beautifully describes this condition of up-rolling, or, as he calls it, of folds forming in the vagina. To illustrate this point, and his method of meeting it, hear the Doctor. He says: "Plough a cane along the carpet with the upper end resting against the abdomen, and recall some of the pain and pleasure of childhood. The exercise is pleasant until a fold or wrinkle is formed, and then it is perceived that the mechanical violence at both ends of the stick is great."

The fetal parts are in no danger from pressure against folds; the folds are in danger by reason of the weak texture of the vagina. "Delay is very apt to occur," he continues, "and folds apt to form at the point where the levator ani, reinforced, perhaps, by the transversus perinei, makes a firm band across the vagina. The wide and shallow pelvis of the truly feminine and truly maternal type actually favors this complication. I hold it to be our business, since we cannot pull the head forward, to do the next best thing, and that is to push this band backward behind the head, as it were, toward the roomy quarters under the promontory of the sacrum."

In cases such as my own, where all effort that I was able to make, or had knowledge of, failed either to lessen the force of the labor or to get the head to extend, or to get it out of the depression it had formed, there is yet left us the forceps by which to ward off the accident. By timely application of the forceps, and skilful effort to carry the head upward and forward, many, if not most, of the cases of central rupture may be prevented. Indeed, I doubt but little that, by timely use of all the forces at our command, any case may be prevented.

To be on the lookout for this accident is ever the duty of the attendant, and whenever any departure from the normal presents, either in the character of the labor, the position of the presenting part, or the structure of the pelvic floor, he must resort at once to the best means of correction.

The operation of episiotomy for cases of rigid perineum has yet some few advocates. The procedure is not well adapted, however,

for cases of threatened central rupture. If the perineum is rigid, relaxation can be brought about by other and better means, and if it is about to give way from unusual relaxation or thinness of the posterior segment, perineal incisions would only increase and not lessen the danger. Credé, however, as late as ten years ago, advocated this method decidedly as a preventive measure of rupture, not confining his study at all to central perforation. Of 300 operations 29 had rupture in spite of the incision. The objections that have been presented by others against this operation are so well known that I need not present them here.

The forceps may result in getting only the lesser of the two evils. In our effort to prevent posterior central laceration, we are in no little danger of causing an anterior rupture. The anterior segment has not been dilated as yet, and the whole force of the labor comes suddenly against it. Tear of the commissure is of so little importance in contrast, that the use of the instrument can in no wise be contraindicated on account of it.

DISCUSSION.

Dr. Eugene Boise, of Grand Rapids.—Mr. President: I am very glad that Dr. Sexton took the ground in his paper that he did, that we are not to attempt to prevent central ruptures of the perineum by manipulative interference so much as by the application of forceps. It seems to me, in the class of cases he has narrated, our safety lies almost entirely in the early application of the forceps, as by it we can control the rapidity of the delivery. The tension placed on the muscles should guide the progress of labor.

He has not entered into a discussion of the support of the perineum, and I will not touch upon it. Some physicians attempt to guide the head forward with two fingers in the rectum; this answers the purpose of shaping the direction of the head. Aside from septic possibilities, it is considered a factor in the after-production of hemorrhoidal difficulties, but I think that it is not to be taken into consideration. I simply wish to emphasize the conclusions the essayist drew, and to say that our safety lies in the judicious application of the forceps by which we can control the rapidity of the delivery, and by which we direct the application of the uterine force. Dilating, as he says, and attempting to draw the muscles over the advancing head, may possibly be

done with advantage; but it must be done in the intervals between pains. The pressure of the head upon the perineum seems to increase the reflex nervous impulse by which the bearing down is increased, and if we by manipulative interference draw back the muscles at the time of a pain, we increase the force which the woman involuntarily uses, so that all efforts at dilatation must be made in the intervals between pains.

Dr. M. Rosenwasser, of Cleveland.—The paper just read by Dr. Sexton is a very interesting one, for cases of central rupture of the perineum are extremely rare. I have only had one case of the kind in twelve hundred and odd obstetrical cases, besides several hundred I have seen in the obstetrical department of Prague University. The rupture occurred in the case of a primipara. I noticed nothing abnormal about the pelvis or perineum, and the position of the head was perfectly normal. Labor was protracted. I applied the forceps, the head was bulging against the perineum, and while I was waiting to allow relaxation, suddenly contraction came on, which I did not expect. Rupture took place with the forceps on, trying to prevent what Dr. Boise has spoken of. I could not prevent it in spite of the forceps on the head. I do not know why we should attach so much importance to central rupture. It did not seem to harm my patient any more than a rupture through the anterior commissure.

Dr. John M. Duff, of Pittsburg.—This is certainly a rare accident as far as my own observation goes; nevertheless, I have seen two cases in which there was delivery through the central perineal rent. One of them was the wife of a Lutheran minister. She did not have any operative work performed subsequently, and I was called to attend her in her next confinement. I was not apprised of the fact that she had a central rupture of the perineum, and in making my examination (it was a short time after I began the practice of medicine) I got my finger into the rent and did not recognize the fact that I did not have it through the vulva proper, but through the opening in the perineum. I delivered her through the same opening. I soon discovered my mistake. Afterward I freshened and closed the rent.

The other case was in the hands of a friend, who sent for me because he could not apparently prevent what threatened. Before I got there the perineum had ruptured centrally and the child was delivered through the opening.

I have seen two cases in my own practice where central rupture was threatened. In one I applied forceps and delivered without any rupture. It required considerable care, and the patient was put under

the influence of an anesthetic. If I had not done this, in spite of my efforts rupture would probably have taken place. In the other case I found I could not deliver with the forceps, and the probabilities were there would be a rupture. I did not perform episiotomy in the ordinary sense of the word, but I incised the central portion of the perineum and kept my forceps on during the time I did so, held the head and delivered. I had simply a plain wound, which I sewed up, and did not have any trouble with it. I recall another case, in which the physician did not tell me what the position was, but in the three cases they were occipito-posterior positions, and they were in roomy pelves.

Where this accident happens and gets beyond our control, I believe it is because of the fact, after the engagement of the head at the superior strait, that there is not enough resistance in the pelvis to bring about antero-rotation, which should take place normally in 96 per cent. of the cases of occipito-posterior positions; the head is forced down upon the relaxed perineum, which is thin and sacculated, and must necessarily pass through with ordinary force if there is not something to guide it. In one of the cases mentioned, the one in which I made the incision, we had a flat, low pubic bone, and it was impossible to drag the head up.

From my observation in these cases I should suggest, just what the author has done, that the forceps be put on and delivery aided by forceps rotation if possible, but you need not look for this condition. I do not want to make the assertion too strong, but my observation would justify me in saying that central rupture need not be feared, except in those cases in which there is a small head and a large pelvis, in which the head after it engages in the superior strait has shot down, as it were, suddenly, and we do not have an opportunity to discover what is going on until it is too late.

This leads me to another point, though it may be comparatively irrelevant. Where I find a thin perineum posteriorly, and, as sometimes happens, puckered, thick and pulpy anteriorly, I am in the habit of training the perineum before the head comes down, so that I am sure to have it in condition that I can pass the head through easily. While it is perhaps contrary to the present methods of practising obstetrics, and might be said to be defective so far as asepsis in concerned, still, with proper aseptic precautions it is safe. I have a good deal of confidence in primarily training the perineum by pressure and the use of vaseline to prevent this rupture, so that it will stretch and be prepared for the entrance of the head. It is very seldom, however, that we meet with these cases, and when we do it requires prompt action to prevent rupture; but with our present resources in operative work I

do not think there is any material danger if they are properly and promptly sewed up. In sewing them up there can be an improvement made in the condition of the woman by reaching back far enough to get the fibres of the sphincter ani and levator muscles, drawing them together, and making a better perineum than she had before.

Dr. Sexton (closing the discussion).—Central rupture of the perineum is an accident that is rare, and with our present improved methods of repairing the perineum it is not such an important one as we have heretofore been led to believe. However, the case I reported came on unexpectedly, and in looking over the literature of the subject I found that it was extremely meagre. In meeting this case in the way I did and preventing the accident so successfully, I thought it would not be out of place to present it for your consideration. I hardly expected to elicit much discussion, and am very glad the important points have been so clearly brought out.

PREGNANCY FOLLOWING A PARTIAL SUPRA-PUBIC HYSTERECTOMY, COMPLICATED BY HEMORRHAGE THROUGH THE ABDOMINAL CICATRIX.

By X. O. WERDER, M.D.,
PITTSBURG.

The case which I am about to describe is so interesting and, I believe, unique in many of its features that I choose this opportunity to put it on record.

Mrs. Mary L., twenty-nine years old, married since August, 1890, but sterile, consulted me for the first time in June, 1891. She had been in good health until about five or six months ago, when she noticed a slight enlargement of her abdomen, accompanied by discomfort and, at times, pains in her pelvis. The swelling of her abdomen gradually increased until at the time she first saw me it had attained the size of a five or six months' pregnancy; with the enlargement of her abdomen the discomfort in the pelvis increased. The pains "at the bottom of the bowels" became very severe and were of a bearing-down character. Locomotion was very much interfered with and she was frequently unable to lie down a night. Her digestion became deranged and her health began to fail. While she possessed a fair amount of adipose, she was pale and anemic and the least exertion fatigued her. Her menses, which for years had been somewhat painful, were now accompanied by considerable suffering, though the flow was scanty, lasting only three days. An examination showed a firm, hard, and roundish tumor, occupying the centre of the abdomen and extending from the symphysis pubis to the umbilicus and attached to the posterior surface of the fundus uteri. Tonic treatment continued for three months produced a marked improvement of her general health, but had no effect on the local condition in the pelvis. She was

advised to go to Mercy Hospital, where for two months electricity was applied according to Apostoli's method, a total of fifteen applications in all, varying from 100 to 150 milliampères. This treatment neither affected the size of the tumor nor did it produce the slightest symptomatic improvement, so that the patient clamored for operation, which was performed December 3, 1891.

The tumor was a fibromyoma attached by a very broad and thick pedicle to the posterior and right surface of the fundus uteri. The base of the tumor was encircled by the elastic ligature closely hugging the uterus, and as subsequent events proved, including a small portion of the uterus itself. The tumor was transfixed with pedicle needles immediately above the elastic ligature and cut off above this point. The uterine cavity had not been opened. The pedicle was fixed in the lower angle of the wound in the usual way. The tumor weighed twelve pounds. Convalescence was uninterrupted. Ligature and pedicle came away on the twentieth day. Patient left the hospital January 17, 1892, about six weeks after the operation, with a small fistulous opening at the bottom of the abdominal wound. Her menstrual period returned February 19, about a month after leaving the hospital, and at this time she noticed a slight bloody discharge from this sinus.

In March her catamenia did not appear at the expected time, and soon afterward other symptoms of pregnancy developed. About this time I found the cervix high up in the pelvis, uterus firmly attached to the abdominal wall, soft, elastic, and enlarged. The fistula in the lower angle of the wound was still open—just about large enough to introduce a sound. A subsequent examination (about a month later) confirmed the diagnosis of pregnancy. She was then having some pain in the pelvis, about the uterine attachment to the abdominal walls. With the exception of this pain, or rather discomfort, her pregnancy progressed very favorably thus far. At the beginning of the fourth month a gradual rotation of the uterus began at its point of fixation to the abdominal wall, *i.e.*, the uterine tumor no longer occupied the middle of the abdomen, but began to crowd more to the left of the median line. During her whole pregnancy, the left side of abdomen was the principal seat of the pregnant uterus, it scarcely reaching beyond the median line toward the right side.

At the end of the fourth month there was a copious hemorrhage

from the fistulous opening at the lower angle of the abdominal cicatrix, which by this time had become enlarged from the internal pressure to the size of a half-dollar, the amount of blood lost being at least a pint, according to the estimate of the patient. About three weeks later there was another hemorrhage from the same place, to the amount of a teacupful of blood. At the end of the sixth month she again lost about a cupful of blood. There were seven hemorrhages in all, five of which were profuse, producing a marked anemia of the patient and causing a great deal of anxiety as to the ultimate result. In order to have her under better control, and to be ready for any emergency that might arise, I advised her to go to the Rosalia Maternity Hospital, which she entered October 26, 1892. The last hemorrhage had occurred about a week before her admission to the hospital. During the last six or eight weeks she had remained in bed, hoping that by absolute rest the hemorrhages would be less likely to return.

Labor began October 30th, four days after entering the hospital, but at least three weeks before her expected confinement. The os uteri at the time of labor was very high up and very hard to reach. First stage of labor was very slow; dilatation not complete until early the next day. The patient by that time being pretty well exhausted, it was terminated by forceps. During labor there was only a slight bloody oozing from the fistulous opening. The child was living, but very small and thin. The placenta was found adherent just under the fistulous opening from which the bleeding had taken place, requiring manual separation. At this place, the hand in the uterus noted an apparent absence of the uterine wall, and the placenta seemed to be attached to the abdominal wall, around the external sinus. The abdominal wall was extremely thin, as could be easily ascertained by the hand placed over it and pressing against that in the uterus. After emptying the uterus it contracted at once, leaving a small depression in the abdominal wall around the fistula. The loss of blood during the third stage of labor was not considerable. Patient made an uninterrupted recovery and left the hospital on November 28th, with a living, healthy child, just four weeks after her delivery. The fistulous opening had become perfectly closed by that time.

Mrs. L. presented herself to me for examination May 2, 1893, with her child, which was hearty and well. The patient has been

in good health since she left the Maternity Hospital. She has not menstruated since, and she is still nursing her child. Abdominal wound perfectly healed; no trace of fistulous opening. The cervix is very high up in the pelvis; uterus small, measuring two and one-half inches, still firmly attached to the abdominal wall. The body of the uterus seems to consist of two distinct cavities, the one on the left evidently being the uterine cavity proper; turning the sound a little to the right, it enters another cavity which is about one-fourth of an inch deeper than the other and leads to the bottom of the abdominal cicatrix, the former fistulous opening, at which place the point of the sound can be distinctly felt directly under the cicatrix.

There is no doubt in my mind that the slough under the elastic ligature extended into the body of the uterus and on separating opened the uterine cavity, and that there was a direct communication between the fistulous opening in the abdominal wound and the uterine cavity, which allowed some of the menstrual blood to escape through it at her menstrual period; and that, furthermore, the source of the hemorrhages during pregnancy was the placenta itself, the upper edge of which was attached immediately under the bleeding surface.

Menstruation through an abdominal fistulous opening occurred in another case in which I removed a fibroid tumor of the uterus with thick, short pedicle in a young woman, the case being almost identical with the one described above. The pedicle was treated in the same manner as in the previous one. During the first and second day of every menstrual period, which lasts from three to four days in all, there is a slight bloody discharge through an opening in the lower angle of the abdominal cicatrix not larger than the head of a pin, which during the inter-menstrual period is marked by a minute black spot.

Pregnancy following a complete hysterectomy, of course, would be an impossibility, but even following the more conservative operations upon the uterus for subperitoneal or pedunculated fibroids, it seems to be a very rare occurrence. In A. Martin's seventy-eight recoveries following enucleation of fibroid tumors,[1] in which the cavity of the uterus remained intact, pregnancy occurred only once; in addition to this he was able to record only two more cases in which gestation followed the same operation. In the literature at

[1] "Ueber Myomoperationen," in Zeitschrift für Geburtshülfe und Gynäkologie, 1890.

my disposal I was not able to find a single case followed by pregnancy in which a part of the uterus was removed, as was evidently done in the case reported.

The fact that pregnancy does occur, however, though in a very small percentage of cases, should induce us, in the first place, to practise conservatism in the performance of these operations, *i. e.*, where we have to deal with a single tumor in the uterus of a young woman which can be removed without sacrificing the whole corpus uteri, we should try, in my opinion, to preserve that organ in as nearly a normal condition as possible. This object can, in cases such as the subject of this paper, be best attained, in my opinion, by the enucleation of the tumor as practised by A. Martin. While enucleation does not increase the risks of the operation very materially, it has this decided advantage over the method employed in my case, that it leaves an absolutely intact uterine cavity without fixation of the uterus to the abdominal wall, and would, therefore, pervent any unpleasant and dangerous complications, such as encountered in the case reported.

To summarize briefly, the principal points of the case described are:

1. The menstrual discharge through a small fistulous opening, remaining after a partial supra-vaginal hysterectomy, which communicated with the cavity of the uterus.

2. Pregnancy occurring eight or nine weeks after operation in a woman previously sterile in spite of a utero-abdominal fistula.

3. Pregnancy terminating in the delivery of a healthy though poorly developed child at, or at least near, the end of her term, in spite of a firm and unyielding fixation of the uterus to the abdominal wall, and in spite of frequent and profuse hemorrhages from the placental site, through a sinus opening in the lower angle of the abdominal cicatrix.

DISCUSSION.

Dr. George F. Hulbert, of St. Louis.—Mr. President: I congratulate myself that I have had the pleasure of hearing Dr. Werder's excellent paper, because it suggests a different explanation for the phenomena he has detailed, and if it were not for the fact that he had

demonstrated the correctness of his interpretation by the use of the sound there would be room for difference of opinion. In the treatment of the pedicle in these operations I believe that we never know how much tissue is going to be left living on both sides of the ligature, and as an illustration showing the extent of tissue that may be destroyed by the ligature upon the internal side, I recall a case of hysterectomy in which the lower segment of the uterus was left, the usual clamp was applied, and the stump was treated extra-peritoneally. The patient was a negress, about thirty-five years of age. I certainly did not anticipate sequelæ, but about forty-eight hours after the operation, on account of the restlessness of the patient, the dressings becoming disturbed, it was thought advisable to reapply them, and in removing the same there was found what was supposed to be an extra-peritoneal dressing of the stump. The clamp was so loose that it could be moved in any direction, and the necessity of its remaining any longer was hard to appreciate, hence it was removed. There still remained the two supporting needles. There did not seem to be a great amount of traction even at the time the stump was dressed. About four or five days afterward the dressings were again changed, when the needles were removed, and at once the stump disappeared in the abdominal cavity. I anticipated no unpleasant consequences. Everything seemed to be perfectly healthy. There were certainly no septic manifestations, for the patient's condition was good from the beginning of the operation. About a week afterward she had a fetid vaginal discharge, and shortly thereafter there were passed through the vagina the remnants of the cervix. In short, the entire cervix had sloughed and fortunately had been cast off and discharged through the vagina. This case illustrates the extent of tissue that can be destroyed by the ligatures that are applied to these stumps; and judging from the description given by the author, the probability is that there was a sufficient amount of tension brought to bear on the uterine wall at this particular site, so that he really ligated a portion of the uterine tissue sufficient to produce strangulation of the pedicle.

In applying ligatures, I think we are all imbued with the idea that they must be exceedingly tight. We never feel that we have them too tight. We cannot see the extent of tissue that is possibly going to be destroyed on the inner side of the ligature, so that in dealing with subperitoneal fibroids or short pedicles, it is a question as to whether it is always advisable, where we can see the tension, as we can upon the external surface of the uterus, to make the ligatures so tight as we are seemingly inclined to do. If we treat the stump extra-peritoneally and use supporting needles, we are practically in command of the

situation as far as hemorrhage is concerned. But in regard to the hemorrhages in this case another explanation can be offered for them, particularly where pregnancy follows. Often there has been sloughing of tissue on the inner side of the ligature, as in Dr. Werder's case, leading into a fistulous opening in the cavity of the uterus, and thereby affording a passage for the menstrual blood from the uterine cavity to the external surface. I now speak of these conditions being brought about in the presence of pregnancy after apparently complete cicatrization. Primarily there is an agglutination and incarceration of the stump in the abdominal wound; bearing in mind that in the presence of pregnancy there is a remarkable change in the uterine tissues, it is not improbable to conceive on account of these tissue alterations there may be brought about the state of affairs that happened in this case, on account of the softening and breaking down of the cicatricial tissue brought about by the increased hyperemia; and that we might have hemorrhage come from stumps under these circumstances. This was a thought that occurred to me when Dr. Werder was reading his paper, before he got far enough to demonstrate the fact that he had a fistula.

The idea of discharge from scar tissue was strengthened in my mind by another case. It was not a case of fibroid, but a pus tube, which, on account of the objections of the patient, I never could succeed in removing. It finally opened outward through the abdominal ring and externally above Poupart's ligament. The abscess appeared here and the pus was evacuated at that point. I had no difficulty in demonstrating that it was the tube, by introducing a sound through the fistula and carrying it to the right cornu of the uterus. It was a pyosalpinx which unfortunately burrowed and opened in that way. The constitutional conditions in that patient were exceedingly bad and very slow in recuperating. The systemic condition was so pronounced that the menstrual flow was not present for some months. I supposed that by washing out, observing cleanliness, and maintaining a healthy granulating surface, we could get cicatrization of the walls of the tube; that the scar would be sufficient, and there would be no further trouble occurring as far as the pyosalpinx was concerned. Her general condition improved sufficiently to restore the menstrual function. This was a hospital case, so I had the opportunity of continued observation. There were decided nutritive phenomena in the scar presented over Poupart's ligament, in that at each menstrual epoch the scar became bluish in color and persisted from the time of the menstrual flow. She suffered considerable pain at each succeeding menstrual period, until finally (I think it was three or four months afterward) she had a

decided bloody discharge and breaking down of the scar tissue at this site. Ever since that time it has persisted and she has menstruated practically through this opening. The case simply illustrates the possibility of scar tissue in the presence of these nutritive changes becoming gradually disorganized and the fistulous condition being again presented. I do not believe the menstrual fluid comes from the uterine cavity in this case. I never succeeded in introducing a sound through into the uterine cavity. I believe the pyogenic tissue practically, which lines the fistulous tract, simply on account of the weak nutritive state in the presence of hyperemia, presents, not menstruation, but simply permits the oozing of blood. In this case of Dr. Werder's we have a positive demonstration of the fact of there being a fistulous connection between the uterine cavity and the external surface.

Dr. Charles A. L. Reed, of Cincinnati.—This paper is but another instance or reason furnished us why we should treat the pedicle in hysterectomy and myomectomy a little differently from what we have been doing. The case related by Dr. Hulbert was one full of illustration. Cases have occurred in the practice of all of us, which serve as additional illustrations of what are the unsatisfactory results in dealing with the pedicle in the extra-peritoneal way. We hear criticised on all hands, the part which this operation plays in the induction of ventral hernia. We all recognize the fact that it is a weakening element to the abdominal wall. I was impressed by the case alluded to by Dr. Hulbert, in which he had contraction of the pedicle and spontaneous amputation of the cervix; that Nature, with splendid emphasis, directed the attention of the surgeon to what he ought to have done in the first place. An operation that I believe has come to abide with us is that of total extirpation of the uterus with enucleation of the cervix, and when that operation has had a fair trial, such as has been credited to the operation by the neud, I feel we shall have not only a larger average percentage of recoveries, but recoveries of a much more satisfactory character.

The more I see of the operation of complete enucleation, the more frequently I do it, the more am I impressed with its utility, surgical accuracy and completeness. I do not want to reopen a discussion in which I have been participating with my friend Dr. McMurtry on the other side for a long while, but I cannot let this occasion pass without pointing to the circumstances which have been brought to our attention as additional reasons why we should do complete extirpation when we do hysterectomy at all. I am perfectly convinced that there are instances in which the neud is more applicable, but those instances are rare. The more frequently the operation of total extirpation is prac-

tised, the fewer will become the instances in which it is inapplicable. Hemostasis is more completely acquired in complete than in partial enucleation; asepsis better in complete enucleation than in partial extirpation. The term hysterectomy as applied to the operation by the neud is a misnomer. It does not remove the uterus, and the term can only be applied with etymological precision to the operation of total enucleation of the organ. I trust the time will come when the term hysterectomy will be recognized as having that application and none other.

Dr. Hulbert.—I would like to ask Dr. Reed whether he has had any experience with the method advanced by a New York gentleman, of temporary compression of the pedicle for forty-eight hours, and then allowing it to sink into the abdominal cavity?

Dr. Reed.—I have not. I should consider it very hazardous. The neud is a dangerous instrument. It produces necrosis, which furnishes a field for the propagation of pus microbes. In the majority of instances pus does occur in and about the pedicle in which the neud is used, and such pressure is liable to induce necrosis. I would hesitate very much to do, it and do not see why it should be done when the other method can be done as easily. Deep ligature of the broad ligaments is not a difficult thing, unless you have those cases in which the tumor involves the broad ligaments entirely. Then we have a different state of affairs, one in which we ought to practise extirpation of the appendages. I have a case now in my hospital making a safe and easy recovery, in which I encountered a large myomatous tumor the size of two oranges. On lifting it up, entirely freeing it from adhesions, I discovered there was still a larger tumor occupying the right broad ligament. I recognized that here was a case in which I was to do something or nothing. I proceeded to slit down the broad ligament and enucleated the tumor, an expedient I resorted to with some little timidity for the reason that no one knows what may be at the base of the tumor he is enucleating. Nobody knows how many cavernous sinuses there are, and how extensive may be the hemorrhage. Fortunately nothing occurred. I cut off a large portion of the tumor of the uterus and a large mass of the side of it, then with an elastic ligature around the cervix I took my time to enucleate the cervix. The whole operation took about thirty-five minutes. It was not a difficult procedure, and one which enabled me to close up the peritoneal cavity entirely. The case is entirely satisfactory, and is only one of a number of that sort where we do this operation. We did not have abdominal fixation of the pedicle, weakening of the wall, secondary spontaneous amputa-

tion of the cervix, or hemorrhage from the cicatrix. Of course, this woman will hardly become pregnant.

Dr. M. Rosenwasser, of Cleveland.—I rise to ask Dr. Reed a question. In discussing Dr. Werder's paper he is advocating total hysterectomy. I do not suppose he means to convey the idea that total hysterectomy is applicable under such circumstances as related by Dr. Werder concerning his case, where a myoma can be enucleated from the substance of the uterus without involving the cavity of it. I would ask him whether in such a case he would remove the entire uterus or preserve it for natural use?

Dr. Reed.—I do not think it is indicated in Dr. Werder's case. I am glad Dr. Rosenwasser asked the question, or my remarks would be open to the construction he has indicated, and I would not like to be so placed upon record.

Dr. Werder (closing the discussion).—In regard to the remarks made by Dr. Hulbert, I must say they are new to me, and I have not given the matter any thought. But I am certain that the condition in my case was a genuine utero-abdominal fistula.

In regard to total extirpation, I am satisfied Dr. Reed would not have done it in this case. I am rather partial to total abdominal extirpation myself, since I have so treated two cases with good results.

I am sorry that there was not more attention paid in the discussion of my paper to the operation of enucleation as practised by Martin—the conservative method. It is a matter of importance in a young woman who is desirous of becoming pregnant, and we should try all means at our command to preserve her organs if possible; this can only be done by the method advocated by Dr. Martin, which consists in shelling out the tumor from the substance of the uterus and closing the uterine wound by deep or buried sutures. By this method the uterine cavity is not opened; the uterus is not fixed to the abdominal wound, and it practically leaves a normal uterus. This is the principal point I want to make in presenting this paper.

THE LEGAL QUESTION IN OPERATIONS ON THE INSANE.

By WALTER P. MANTON, M.D.,
DETROIT.

THERE is, perhaps, no more interesting page in the history of medicine than that relating to the evolution in methods of the treatment of the insane.

Beginning with the ancient Greeks, and possibly with the Egyptians, both which peoples seemed to have entertained a fair knowledge of insanity as a brain disorder, we see the light gradually failing, until in the horrors of the dark ages it becomes entirely quenched, and the mentally alienated is transformed into the "possessed of devils."

It is not so long ago that even in this country human beings suffering from mental disease were degraded lower than the beasts of the field. Happily that time is gone, let us hope never to return.

While more has been done within the past fifty years than in all the preceding centuries, to alleviate this unfortunate class of persons, there still remain many problems of importance awaiting solution.

The State has taken upon itself the prerogative of caring for its insane citizens, and for this purpose has erected and equipped its often magnificent asylums—homes where the mentally sick can be cared for and kept from both harm to themselves and injury to the public. It has placed at the head of these institutions men whose experience and training have fitted them for the management of this class of cases. But, while the State feeds, clothes, and houses its insane, a remnant of the ancient superstition still clings to its methods, and its wards are too often looked upon as aliens—to be fed and cared for, but differing from the rest of mankind,

and little subject to the physical conditions that affect the outside world. That the mental sufferer is capable of experiencing the same sicknesses, accidents, and diseases as those possessed of normal faculties is too often overlooked or treated superficially by those having to do with asylum affairs; and the restoration of the shattered brain by rest, restraint, and therapeutical measures seems largely the aim of the majority of alienists. I have already called attention, in another place,[1] to the very small percentage of the so-called cures effected under asylum treatment, even under the most modern and scientific methods. I have also shown, or attempted to show, on repeated occasions, that the insane are entitled to more than this one-sided view of their condition; that even the most hopelessly demented person has the right to relief from bodily suffering, even if that relief may be expected to result in little or no improvement in his mental malady.

My now somewhat extensive experience in this line of observation places me in a position to affirm still more—that the cure or mitigation of somatic ailments, especially where surgical diseases are concerned, has a direct and decided modifying influence on the course of the mental manifestations. In every one of the cases upon which I have operated there has been a marked improvement in the patient's mental condition.

As is well known to the Fellows of this Association, a great deal of my work among insane women has been in the line of abdominal surgery, and the results which I have obtained have amply justified such procedure, and won the gratitude of the friends, and in several instances of the patients themselves. A recent pamphlet of resolutions, formulated by the Pennsylvania Board of Charities, however, characterizes such treatment as "unjustifiable," "inhuman," "brutal," and "illegal." The first three of these epithets can be passed unnoticed, since they may or may not be true, according to the point of view of the observer; the last, however, is of vital importance, and concerns everyone engaged in gynecological work among the insane. For, if operations involving the removal of the tubes and ovaries are prohibitable, certainly all conditions requiring the use of the knife should also fall under the ban. If, as asserted by the legal member of the beforementioned Board of

[1] A Plea for Insane Women Suffering from Local Diseases. American Gynecological Journal, January, 1893.

Charities, "a surgeon practising oöphorectomy upon an insane woman, unless to save life, takes a great risk—the risk of a criminal prosecution," there are few of us who, even with the most philanthropic desire to relieve the sufferings of this class of patients, would care to undertake such procedure.

In order to satisfy my own mind on this question I have had the laws of several States examined, and the digests searched for a case in point, but nowhere have I been able to find any law directly touching the matter, nor a ruling of the court defining the position of the surgeon under such circumstances. Arguments must, therefore, be drawn wholly from analogy. In nearly every State the guardian of an insane person stands in much the same relation to his ward as the guardian of a minor, and the duties of the latter are clearly defined regarding the care of property and of person. Thus, "such guardian, if of both person and property, shall have management of estate and custody and tuition of person, unless father or mother is living, who, if suitable, has a right to the control of the person."[1] "Such guardian shall have the custody of the person, etc."[2] "Such conservator shall have care and management of the real and personal estate of the ward, and the custody of his person, unless otherwise ordered by the court."[3]

Many similar citations might be given from the statutes of other States, but those quoted are sufficient to clearly indicate the relation of the guardian to the ward. It seems plainly evident from the above that the guardian, occupying in general the relation of parent to child, has authority to sanction any course, whether such course relates to health, morals, or education, which, in his opinion, is necessary to the welfare of the ward. This is clearly stated by Schouler: "As the guardian of a minor stands in the place of a parent, *sub modo*, his rights and duties concerning the person of his ward are to be correspondingly with those of a parent."[4] As the right of the parent to consent to or authorize operative or other treatment of his child can hardly be questioned, so the right of the guardian in such matters seems supreme and indisputable.

The surgeon, therefore, having obtained the consent of the guardian, or the relative of the insane person who nominally stands in

[1] Ohio Revised Statutes, Sec. 6255.
[2] Massachusetts Statutes, Sec. 1122.
[3] Cochran's Annotated Ed. Revised Statutes of Illinois, 1891, p. 955, Sec. 5.
[4] Domestic Relations, Sec. 337.

the relation of a guardian, to operative procedure, said treatment being in the best interests of the patient, the surgeon, acting as the agent merely of the guardian, is obviously relieved from all obligation, even should the patient at some future time or as the result of the operation, recover her reason and object to "her mutilated condition." Neither could the guardian be held responsible, if, after obtaining the advice of a surgeon or surgeons of known ability and standing, he had consented to the operation which was intended for the benefit of his ward.

"The general law is plain, and definitely stated, and the conclusion is not only strong, but irresistible, that the guardian is to use ordinary prudence and judgment in the care and custody of the ward's person; such prudence, as near as possible, as a parent would exercise."[1]

The question might also arise as to whether the consent to operative interference, obtained of a patient during a lucid interval in the course of her mental disease, could be legally assumed as consent after the patient had again lapsed into a mentally disturbed state. The reading of the common law would here also indicate that consent, having once been given, would still be valid even when the mental condition at the time of operation rendered such consent on the part of the patient out of the question.

The conclusions to be drawn from the facts obtained appear to be that, while the insane person has his legal rights in the matter of ordinary care and protection of person as well as of property, the determination of what is best for his interests is vested in the guardian or parent or relative acting in the capacity of guardian. The surgeon, therefore, having the consent and coöperation of the guardian, parent, or relative, in his attempts to relieve his insane patient from physical suffering, whether such attempts are followed by the mental restoration of the patient or by his death, provided the indications for operation are the same as would necessitate and justify surgical interference in the sane, would undoubtedly be sustained in his action by any court of law, as having proceeded in both a justifiable and proper manner.[2]

[1] E. S. Clarkson, Special Brief.

[2] Instances of analogous cases in which the court has sustained the actions of physicians and of guardians are to be found in nearly all the books. *Vide* the case of Russell and O'Leary, against whom action was brought for so-called false commitment to an asylum, Journal of Insanity, April, 1888, and a somewhat similar case occurring in England, Journal of Mental Sciences, July, 1888. Also Long *vs.* Norcum, 2 Ire. Eq. (Eng.) 354.

FURTHER OBSERVATIONS ON THE RELATION OF PELVIC DISEASE AND PSYCHICAL DISTURBANCES IN WOMEN.

By GEORGE H. ROHÉ, M.D.,
CATONSVILLE.

At the last annual meeting of this Association it was my privilege to report eighteen cases of removal of the uterine appendages in insane women, with the results following the operation. In supplementing my previous report with this brief paper I desire to touch upon a feature of the question which has arisen in the interval —namely, the medico-legal relations of this work.

Of the eighteen cases reported last year, three had been discharged recovered at the date of the report. These cases up to the time of this writing remain well and continue doing their daily household work. One other has been at home for seven months, not entirely well, but so much improved that she can be cared for outside of an insane hospital.

Another case (of seven years' residence in the hospital) has so much improved in disposition since the cessation of the periodical menstrual irritation, that I look forward to discharging her from the hospital also.

Since last September I have operated on two additional cases, one of periodical maniacal violence, and the other of melancholia with loud complaints of intense headache. In both cases the ovaries were cystic. The former case has had no outbreak since the operation, but is still detained for observation, while the latter has been discharged entirely recovered, a recovery dating from convalescence from the operation.

The simple results of this work are therefore as follows:

Twenty operations (removal of the uterine appendages) upon insane women with pelvic disease. Eighteen physical recoveries

from the operation, with improvement of the general health. Two deaths.

Four absolute mental recoveries and discharge of patients from hospital restraint. (Two thirteen months, one ten months, one two months.)

Three with complete physical and partial mental recovery. (One at home seven months.)

Seven show mental improvement, some of them of a very decided character, but none sufficient to justify discharge from the hospital.

Three remain in about the same mental condition as before the operation, but are much improved physically.

One was removed from the hospital a few weeks after the operation against my advice, and then placed in an asylum, where I am informed she has been growing worse mentally.

I may also refer here to a case of melancholia with suicidal tendencies, in which I repaired a badly lacerated cervix. The operation was followed by rapid restoration of the mental faculties, and the patient was discharged recovered on January 31, 1893. She remains well at the date of writing.

At the time when I began this work I was simple-minded enough to think that the restoration of an insane woman's mind was an object desirable in itself, even if it involved the loss of organs so unessential to physical life as the ovaries and Fallopian tubes, and especially when these were in a state of disease. It seems, however, that certain influential members of the medical and legal professions regarded this as a grave and dangerous error, and believed it a public duty to endeavor to check similar work which had been begun with encouraging success in one of the insane hospitals of Pennsylvania. The objections urged were based upon misconceptions of the scope and character of the work. The weightiest argument against it was an official legal opinion which pronounced it "brutal and inhuman, and not excusable on any reasonable ground." It was further declared to be "illegal and unjustifiable," and to subject the surgeon to "the risk of a criminal prosecution."

These declarations, coming from a lawyer of high standing, led me to pay some attention to this view of the question, and I sought by conversation and correspondence with leading lawyers of my own State to learn what principles of law, in the absence of specific

legislation, had any bearing upon the matter. The question in its specific form seems never to have been adjudicated in any court of record.

In the case of a sane person, courts have uniformly held that if a surgeon possesses ordinary professional knowledge, exercises ordinary skill, and uses ordinary care in the management of his case, no action of malpractice can lie against him. It is, of course, presumed that, in case of an operation, the consent of the patient shall first have been obtained, both parties acting in good faith, and the patient understanding the object and character of the operation. As a matter of course, likewise, any operation for a criminal purpose, even though with the consent of the patient, would not be justified by the courts. Here, as elsewhere, the law is guided by common sense—in the words of an eminent member of the Illinois judiciary, "The law *is* common sense." The only medico-legal questions, therefore, which seemed to me to apply here were such as had relation to what constitutes valid consent.

With this view I drew up three questions and submitted them to one of the professors in the Law Department of the University of Maryland. The answers which follow are clear and comprehensive, and seem to me to require no further comment.

BALTIMORE, MD., March 6, 1893.

DR. GEORGE H. ROHÉ, Catonsville, Md.

MY DEAR DOCTOR: After considerable investigation I am prepared to answer the several questions submitted to me by you in your letter of February 17th.

"1. Is an insane person, having lucid intervals of greater or less duration, competent in law to consent to a surgical operation upon his or her body, the result of such operation being removal of certain organs or members not essential to life or health?"

During a lucid interval a lunatic is, in the eye of the law, sane. 19th. Cent. L. J. 427.

The act of a lunatic, during a sane interval, has in law the validity of the act of a sane man.

Pope, Law of Lunacy, 18.

Am. & Eng. Enc. of Law, Vol. 2, 112.

Buswell on Insanity, Sec. 17.

I answer, therefore, in reply to the first question that a lunatic,

in a lucid interval, is as competent to consent to a surgical operation of any kind as is any other person.

Of course, you readily understand that great care is necessary in determining whether or not the consent is given when there is an actual lucid interval, and the law cannot relieve a physician from the resposibility of exercising this care.

"2. In case the person above described is incompetent to legally give consent for the performance of such operation, can the recognized, natural, or legal guardians of such person give the consent described?"

According to the theory of the law, the State, acting through courts of equity, is the guardian of all insane persons, both as to their persons and property. The equity court appoints a committee as its agent for the discharge of this duty. Such committee is the legal guardian of the person, and has the power to consent to such measures as may be for the lunatic's benefit.

Pope, Law of Lunacy, 111.

Md. Code, Art. 16, Sec. 96.

Rebecca Owings' case, 1 Bland's Chan. 272.

I answer, therefore, that the committee of a lunatic is competent to give consent for the purposes mentioned, assuming, of course, that he and the physician act in good faith.

The law does not recognize any such person as a natural guardian to a lunatic. The father, and, if he be dead, the mother, is the natural guardian of an infant, but the term is not applied to those who have control of persons *non compos mentis.*

"3. In case a person is always entirely insane, have the natural and legal guardians the right to give the consent described?"

I answer on the authorities cited in the answer to the previous question that the committee of an insane person has the right to give the consent.

"4. In case neither the patient himself, or herself, nor his or her guardians, are competent to give the consent described, has the attending physician the power legally to decide that an operation, as described above, shall or shall not be performed. In other words, dare a physician perform an operation on an insane person if the latter has no relatives living or known?"

In answering this question it is important to bear in mind that no person can be confined until he has been adjudged insane by

proper proceedings, or unless he be dangerous to himself and others.

Pollock on Torts, 108.

Rebecca Owings' case, 1 Bland's Chan. 272.

Fletcher *vs.* Fletcher, 28 L. J. Q. B. 134.

Anderson *vs.* Burrows, 4 C. & P. 210.

Lock *vs.* Deane, 108 Mass. 120.

Underwood *vs.* The People, 32 Mich. 1.

And in the case where confinement is necessary, because a person is dangerous to himself or others, the restraint must be temporary, and further proceedings immediately taken.

Brown on Med. Jur., Sec. 30.

Commonwealth *vs.* Kirkbride, etc., 2 Breste, 398.

It seems, therefore, clear that a lunatic with no committee cannot against his wishes be detained for any purpose except to prevent him from injuring himself and others, and that his confinement being for that purpose only will not authorize the performance of a surgical operation.

I answer, therefore, that a patient confined without a committee cannot consent to a surgical operation, and the attending physician has not the power legally to decide that an operation is to be performed on such a lunatic.

In connection with this subject there are several matters to which I would call your attention.

Surgical operations upon insane persons place the operating physician in a position of delicacy for several reasons. If he relies on the consent of the lunatic he is charged with the duty of determining whether the lunatic is or is not insane at the time of giving the consent. And it is probably true also that insane persons who recover are strongly disposed to hold persons responsible who have confined them for insanity, or who may have performed surgical operations on them while confined. Yet the law appreciates the delicacy of this situation. It does not relieve the physician of his responsibility and of his duty to act with proper caution. It is for this reason that the central principle, in the modern law of insanity, is that the validity of any act of a lunatic depends on his capacity to perform the particular act in question.

People *ex rel.* Norton *vs.* N. Y. Hosp.

3d Abb. N. C. 229.

The law would, therefore, not exact so high a capacity in a lunatic to consent to a surgical operation as it would to enter into a contract.

State *vs.* Housekeeper, 70 Md. 162.

Thus it has been held that a lunatic is capable of being a witness, although not capable of entering into a contract.

3d Abb. N. C. 229.

The physician himself must calculate the chances involved, and assume the responsibility of the propriety of the operation, instead of leaving this to the patient as in the case of a sane man.

Ewell on Med. Jur. 289.

A part of the responsibility which the physician must assume is to determine whether the insane person has that degree of capacity requisite to consent.

Before closing you will permit me to make some general remarks suggested by my reading and thought on this subject. The law hedges about every person with certain protection to his person, and it makes it the normal rule that no person can *in vitum* be even touched by another. *A fortiori*, a surgical operation cannot be performed on a person without his consent. The exceptions relate to persons who are incapable of giving consent by reason of defect of capacity from infancy or insanity. In these cases the power is in the courts of equity to give the consent, and this power the court may delegate to guardians of infants and committees of lunatics. There are, however, undoubtedly cases in which, where there is no guardian or committee, emergencies arise or circumstances exist which make it impracticable to apply to a court of equity. In these cases the surgeon should act with peculiar caution. If there are friends or relatives of the lunatic, he should, as far as practicable, consult with them, and he should, as far as practicable, avail himself of the judgment of other physicians. If none of these are available, he may in cases have to act on his own judgment and responsibility.

This, in my judgment, after a full reading of the subject, is clearly the position in which the law leaves the matter, and I cannot see that it would be wisdom to change it. If the law gave the surgeon greater power it might constitute a temptation to carelessness or to indulge in experiments.

It may be said that in this class of cases the physician is peculiarly liable to be sued by persons who have recovered or partially recovered their reason. On the other hand, it should be borne in mind that the tribunals before which such suits are tried are fully apt to take this fact into consideration.

Very truly,

RICHARD M. VENABLE.

I add here a tabular statement of the cases operated upon by me with results up to August 1, 1883. Two cases included in the table were omitted in the above summary.

Record of Operations upon Women with Pelvic Disease in the Maryland Hospital for the Insane, with Results, to August 1, 1893.

No.	Date of admission.	Duration of insanity at time of admission.	Age	Social condition.	Form of insanity.	Local disease.	Date of operation.	Operation.	Immediate result.	Ultimate result and remarks.
1	Dec. 19, 1886	Second attack Ten weeks.	33	Married	Puerperal mania.	Lacerated cervix, ruptured perineum, adherent ovaries.	Oct. 6, 1891	Removal of uterine appendages; restoration of perineum; trachelorrhaphy.	Recovery.	Decided mental and physical improvement. Recently phthisis developed, under which she is rapidly losing ground.
2	May 21, 1890	Four months.	32	Married	Melancholia.	Lacerated cervix.	Oct. 13, 1891	Removal of the uterine appendages.	Recovery.	Physical improvement. No mental change.
3	Feb. 26, 1890	Three months	39	Single	Hysterical mania.	Anteflexio uteri, firm adhesion of right ovary and tube.	Oct. 21, 1891	Removal of the uterine appendages.	Recovery.	Decided physical improvement. No noticeable mental change.
4	Mar. 2, 1891	Three months	31	Single	Melancholia.	Enlarged ovaries.	Nov. 4, 1891	Removal of the uterine appendages	Recovery.	Decided physical and mental improvement. Patient at home nine months; nearly well.
5	Oct. 5, 1891	One week.	30	Married	Melancholia.	Cystic and adherent ovaries.	Nov. 4, 1891	Removal of the uterine appendages.	Recovery.	Physical and mental improvement.
6	Oct. 12, 1891	One year.	29	Single	Simple mania.	Retroversio uteri, adherent ovaries.	Nov. 19, 1891	Removal of the uterine appendages.	Recovery.	Physical improvement. Slight mental improvement.
7	May 16, 1890	Second attack Three days.	37	Married	Puerperal mania.	Lacerated cervix, adherent ovaries.	Nov. 25, 1891	Removal of the uterine appendages.	Recovery.	Physical improvement. Mental recovery. Discharged recovered August 21, 1892. Remains well August 1, 1393.
8	Mar. 30, 1885	Unknown.	23	Married	Hystero-epilepsy with mania.	Cystic ovaries.	Dec. 10, 1891	Removal of the uterine appendages.	Recovery.	Discharged entirely recovered May 12, 1892. June 30, 1893, she had two hysterical attacks, following accidental death of a relative. She was kept under observation three weeks without any return of the attack. August 1, 1893, she remains entirely well.
9	Aug. 23, 1887	Four months.	39	Married	Puerperal mania.	Lacerated cervix, adherent ovaries.	Dec. 15, 1891	Removal of the uterine appendages.	Recovery.	Great physical and mental improvement. Patient from being the worst is now one of the most manageable in the hospital.
10	Apr. 4, 1890	Epilepsy, Ten years.	25	Single	Epileptic insanity.	Ligamentary cyst size of orange.	Dec. 30, 1891	Removal of ligamentary cyst and uterine appendages.	Death.	Died in status epilepticus. Probably septicemia.
11	Oct 22, 1888	Three months	24	Single	Melancholia.	Cystic ovaries, and congested and tortuous tubes.	Jan. 19, 1892	Removal of the uterine appendages.	Recovery.	No mental change.

12	July 11, 1891	Epilepsy, Seven years.	23	Single	Epileptic insanity.	Double pyosalpinx and ovarian abscesses.	Feb. 9, 1892	Removal of the uterine appendages.	Death.	Died of septicemia.
13	Dec. 28, 1891	Third attack. Three days.	28	Married	Puerperal mania.	Ruptured perineum; enlarged and prolapsed ovaries.	Mar. 9, 1892	Removal of the uterine appendages.	Recovery.	Discharged entirely recovered May 8, 1892. August 1, 1893, remains well.
14	Feb. 22, 1892	Ten months.	43	Single	Melancholia.	Cirrhotic ovaries.	Apr. 20, 1892	Removal of the uterine appendages.	Recovery.	Decided physical and mental improvement.
15	Apr. 12, 1892	Epilepsy, Nine years.	24	Single	Epileptic insanity.	Cystic ovaries.	May 12, 1892	Removal of the uterine appendages.	Recovery.	Convulsions less frequent but still persist. Slight mental improvement.
16	Oct. 31, 1892	Two years.	30	Single	Periodic mania.	Cystic ovaries.	July 14, 1892	Removal of the uterine appendages.	Recovery.	Very decided mental improvement.
17	May 14, 1892	Two years.	29	Widow	Paranoia.	Cystic ovaries; trachelorrhaphy had been done for lacerated cervix.	Aug. 30, 1892	Removal of the uterine appendages.	Recovery.	Improved considerably, but was removed from hospital, and is now reported worse.
18	June 7, 1892	Five years.	30	Married	Periodic mania.	Lacerated cervix, retroflexio uteri, cystic ovaries.	Sept. 13, 1892	Removal of the uterine appendages.	Recovery.	Decided mental improvement, which continues.
19	Sept. 12, 1892	Two years.	30	Single	Hysterical mania.	Retroverted and adherent uterus, cystic ovaries	Dec. 1, 1892	Removal of the uterine appendages.	Recovery.	No mental change.
20	Nov. 3, 1892	Two years.	23	Married	Melancholia.	Retroversio uteri, lacerated cervix, cystic ovaries.	Jan. 19, 1893	Removal of the uterine appendages.	Recovery.	Complete physical and mental recovery. Discharged April 1, 1893. Remains well August 1, 1893.
21	June 11, 1891	One year.	17	Single	Periodic mania.	Enlarged ovaries and tortuous tubes.	Feb. 2, 1893	Removal of the uterine appendages.	Recovery.	Decided progressive mental improvement.
22	Dec. 9, 1892	Six months.	28	Married	Melancholia.	Ruptured perineum, lacerated cervix, probably adherent ovaries.	Jan. 9, 1893	Trachelorrhaphy.	Recovery.	Discharged recovered January 21, 1893. Removal of ovaries was urged, but declined by patient's friends.

DISCUSSION.

Dr. Charles A. L. Reed, of Cincinnati.—Mr. President: Dr. Rohé has again made the Association his debtor by bringing before us an additional contribution to the work which he is doing in original fields. When he presented eighteen cases last year with excellent primary and very satisfactory ultimate results, both mentally and physically, I felt that he had succeeded in establishing a principle for which I have been contending for a number of years. Since that time Dr. Rohé has operated upon two cases. How many women are there, Dr. Rohé, in your hospital at one time?

Dr. Rohé.—An average of 200.

Dr. Reed.—There have been operations done since the date of our last meeting to the extent of one per cent., which is less than occurs in the community of any hospital for acute diseases in the country today, and yet I have already had the intimation presented to me that Dr. Rohé is spaying all the women coming to his hospital; but the fact which has just been brought to our attention shows that this operation is being done only under the most careful restrictions and with the most positive indications. A gentleman who has charge of an important asylum, who is alive to the importance of this question, and who on taking charge of his work carefully investigated his patients for the purpose of determining the existence of pelvic disease, informed me that easily demonstrated pelvic disease existed among his cases to an extent that he was afraid to mention for fear of being called an Ananias. That state of affairs has been existing in America for generations. Patients have been incarcerated in our insane institutions, the key has been turned upon them, and the opportunity which comes from the exercise of the intelligence of which they have have been deprived is gone. They have no means of securing relief; they are shut off from the light of day, and without a dollar they are permitted to wear out their weary existence without having their cases intelligently investigated. That is the average state of affairs in the average asylum in America. In certain quarters there are evidences of improvement. A movement has been inaugurated looking to these private institutions with arrangements for not only gynecologists and oculists, but aurists and laryngologists—persons specially equipped in these particular departments of practice—to go to the poor unfortunates and afford them that relief which is denied them under the existing order of things.

The legal side of the question is one of considerable importance. I can fancy a physician getting himself in trouble by operating on these cases; but permit me to say, that if I ever become clearly established in professional authority over the insane, and a person under my charge need an operation, I shall operate without any consent. I shall operate for clearly demonstrable lesions, and I believe when I have secured results by that operation I can demonstrate its practicability, its utility, and its necessity before the average American jury. I have not investigated the law on this question in my own State. I do not think there exists any law inimical to this practice; but if there is, the best thing to do is to repeal it. If we have an explicit statute on this point, I shall see to it that we shall have someone whose business it is to go abroad and interview the legislators in regard to the matter, fully explaining the operation, with a view to having the statute repealed. I trust in this Association, in which this work has been inaugurated, in which its feasibility has been first demonstrated, a distinction of which we may well be proud, that steps will be taken which will result in the practical adoption of this reform all over our country. To me the most humiliating commentary upon the state of civilization that we have today is the present average equipment of our asylums.

It is my purpose to read a paper in the Neurological Section of the Pan-American Medical Congress on this subject, so I will forbear making any particular and further remarks on this subject now. I have nothing but commendation for the work Dr. Rohé has done and is doing. We should support him with generous recognition in carrying out this magnificent reform.

Dr. John M. Duff, of Pittsburg.—Dr. Reed has anticipated much that I expected to say on this subject. For the past year I have taken more than usual interest in it and have been in correspondence with quite a number of gentlemen immediately engaged in the care of the insane. I am sorry I have not some of my letters and statistics with me to present at this time. I will not speak of the results particularly so far as the cure of insanity from operations is concerned, but more of the influence upon the health and suffering of those unfortunates incarcerated in our insane asylums. It is surprising in institutions where no attention has been paid particularly to the diseased conditions of the uterus or its adnexa, that a very large per cent. of the inmates are subjects of disease of this kind. From the statistics I have in my possession at home I think I am justified in saying that over 60 per cent. of the women in our insane asylums are the subjects of uterine diseases. I recognize the fact that we are in danger of going too far in this matter, and that we must not precipitate this work upon the

profession and the hospitals without due consideration, because in some instances an unworthy and incompetent man without judgment might get opportunities of operating, and avail himself of them with results not creditable to the profession and disastrous to patients. We must educate the profession in this regard, and I am sorry to say that it is necessary for us to do this, because a large element in the profession are apparently governed by prejudice on this subject—we cannot say ignorance. On the other hand, among the laity we need to educate those who represent us in our legislative halls, and with all due respect to their intelligence they are governed to a great extent by ignorance —not an ignorance for which they are perhaps responsible, but for which we are responsible in not endeavoring to educate the public up to the standard of knowledge that we should in this matter. Inasmuch as this Association through Dr. Rohé has been a conservator of the welfare of the insane in initiating a movement of this kind, we should so place ourselves on record and go ahead.

In considering the matter from a legal standpoint, we find in different States that the law has been construed differently. Dr. Rohé has today cited the opinion of a Maryland attorney, as well as the view of Mr. Barlow, of Pennsylvania, on the subject, which are diametrically opposite. What we want, then, if we have laws in the different States which will not permit of this, is to get our legislators in a frame of mind which will cause them to enact laws which will permit us to do this work in a satisfactory manner and in accordance with law and justice, and not place the physician in a position in which he may be liable for damages. We need this not only for operations on the insane, but we need it in all our surgical work. I feel confident that within the past year I lost a patient while I was doing general surgical work during my term in the wards of a hospital in Pittsburg. A young boy was brought in who, if he had had an amputation performed promptly would have lived, but I did not dare to touch him until I obtained the consent of his father. His father would not give consent to operate, but desired me to treat the boy contrary to what my best judgment told me I should do, and as a consequence he died. It is not right, it is not consistent, it is not justice, whether it be law or not. I hope every member of this Association will go home and sow seed in this direction. Do it with circumspection and justice, and in the end we will have good results. I feel such enthusiasm over this subject and in its behalf by the results I have seen by simple operations on the uterus alone without oöphorectomy, that I wish to lend my humble voice and efforts in the direction of this much needed reform.

Dr. Eugene Boise, of Grand Rapids.—I wish to add my testimony and approval to this most valuable paper—valuable inasmuch as I believe Dr. Rohé is working in the right direction to impress upon the laity, and more particularly a large number of the profession, the necessity for operative interference in cases of mental disturbance. The author has related a case of melancholia which was relieved by a simple operation on the cervix. I also have in mind a patient who had been confined in an asylum and had returned home suffering with a severe nervous disturbance, who was absolutely restored to health both mentally and physically by the simple operation of trachelorrhaphy. The profession, without exception, will admit the existence of nervous disturbances from laceration of the cervix and from diseased ovaries. We all admit the desirability of restoring patients both mentally and physically to health by operating on lacerated cervices, yet there are many who refuse to admit the operation of removal of diseased ovaries for the restoration of physical health—ovaries which are of no benefit whatever to the patient; women in whom pregnancy is not possible, and, even if possible, undesirable. Nevertheless, if you remove the disease that is the source of the mental disturbance, by an operation, you are condemned in the eyes of the law. I wish to emphasize the fact that this Association should go on record as upholding the opinions of those who, in spite of this adverse criticism, have the courage to go forward and do that which they know to be right. We must demand recognition from the public that we are conservators of the public health, both mental and physical, and we must also demand recognition from the profession in the face of professional opposition.

Dr. J. J. Green, of Pittsburg (by invitation).—As a visiting member, I wish to congratulate Dr. Rohé on his excellent paper. The subject is a very important one, and knowing something of the feeling existing in the profession in regard to this matter, I am enabled to speak from another standpoint. I am associated with a staff of medical gentlemen who have control of an insane institution that contains 100 patients, known as the St. Francis Hospital of the city of Pittsburg. I know the feeling of the members of that staff and the tender feeling of the medical profession. I am aware also that this progressive measure, as I deem it, received its black eye in my State, and I rise to apologize for it. The profession of Pennsylvania will quickly succumb to any scientific or progressive measure, and I am satisfied our legislators will also. I am satisfied that in a short time, with the present sentiment existing in the legal profession of our State, that such measures will come about, and that any medical gentlemen of requisite

intelligence in charge of an institution of that kind will be allowed to proceed and treat patients in that respect as in others.

Dr. C. Henri Leonard, of Detroit (by invitation).—The paper read by Dr. Rohé was particularly interesting to me as bearing upon the insane in our State, and leads me to speak of one point—that is, if insane women, when they have passed the age of majority, twenty-one years, really have no parents or guardian who can give consent to an operation, it is high time the profession of this State should wake up and obtain a law making some intimate friend of the patient competent to give it.

In the general operation of ovariotomy outside of insane patients, I have taken quite conservative grounds; but in the case of insane patients, where there is no one to give consent, I believe the physician in charge ought to have absolute authority to conduct the treatment and management of such cases, and do for such patients exactly the same as a father or mother would have done for a minor daughter under similar circumstances.

I wish to thank you for the privilege of attending your sessions and listening to the excellent and valuable papers that have been read.

Dr. Duff.—Inasmuch as our State has been apologized for, as a matter of record I want to say that Pennsylvanians are characteristically willing to admit their wrong-doings generally, and I am happy to state that the members of the committee which took the action which gave this progressive measure its first black eye in Pennsylvania, after deliberation and counsel, were good enough to get on their knees and apologize for what they had done.

Dr. Rohé (closing the discussion).—In the first place, I desire to thank the Fellows for the very complimentary words they have uttered about the work that has been done by myself. I regret very much that Dr. Manton was not here to read his paper, which covered to a considerable extent the same ground. Dr. Manton, as you all know, preceded me several years in this progressive work.

Several things have been said in the discussion that I am not prepared to agree with. Dr. Reed said if a patient comes to him, is thoroughly and carefully examined, and he finds she requires a certain kind of treatment, he would resort to it whether he received the consent of the patient or not. I think we had better stay within the limits staked out by the law upon that point. I would not run the risk of operating upon a sane patient who declines to give consent to any operation. We should be careful not to trespass beyond the law.

Dr. Reed.—If you were to see a man drowning, although he might be insane, and you did not exert yourself properly to rescue him, you would be indicted for manslaughter. If you were called to an insane patient incapable of giving consent, and bleeding to death from a ruptured ectopic pregnancy, and you failed to operate under these circumstances, you would be equally amenable, and I construe it that in all of these cases there exists an emergency for an operation, and I would proceed on that principle, and I would ask Dr. Rohé to state to what extent he recognizes that principle as applicable to this class of cases.

Dr. Rohé.—I do not wish to place myself on record as placing a limit for interference in these cases. I do not think there is room for disagreement with the modification which has been made by Dr. Reed of his previous statement. I may have misunderstood him at first, and if so my criticism has no force.

I am asked sometimes by members of the profession, What are the indications for operation in certain cases? What form of insanity would you operate on? Which form would be more and which less likely to be benefited by the operation of removal of the appendages? I invariably answer that I never operate for insanity. I do not know what organ is diseased in insanity; that if I find an organ is diseased, and it can be removed with safety to the patient, I remove it. I look upon an insane individual exactly as I would upon a sane one. I observe the same caution. I do not remove organs that are not diseased. In the case of patients who are not insane, and where other measures of treatment might be successful, I sometimes adopt temporary expedients. I am not sure, however, that "temporary expedients" are often curative. I always feel a sense of humiliation when I am compelled to do what my best judgment disapproves.

Dr. Duff has expressed sentiments about the profession which I am not prepared to indorse. I have found that the average doctor is a very intelligent sort of person, and I am not disposed to set my opinion above that of my fellow-practitioner. I find upon being reasoned with he generally takes a reasonable view of things. In the same way, while the public are ignorant, they are likewise amenable to reason, and the exceptions are those who won't listen to reason. The great majority of people listen to reason. It is much better to talk and reason with them kindly and tell them what you know on the subject, than it is to start in and tell them that *they* know nothing about it, and that you know all about it. Do not abuse a man first, and then try to convince him afterward. You will generally fail.

Dr. Duff.—The remarks that I made were along the line of what Dr. Rohé has just been saying, but he must have misunderstood them.

Dr. Rohé.—Without authority to give consent, is it wise to attempt to secure legislation upon this point? As I stated in my paper, I know of no instance, and the lawyer could find no instance, where a specific decision had been rendered upon the special point involved in these cases. Let us wait until some such decision is rendered.

PUERPERAL ECLAMPSIA; ITS CAUSATION AND TREATMENT.

By AUGUSTUS P. CLARKE, M.D.,
CAMBRIDGE.

The causation of puerperal eclampsia has long been a theme for free and extended discussion. The earlier writers on obstetric science frequently adverted to the subject. The Father of Medicine was not unacquainted with the character of many kinds of convulsive seizures. In his thirty-ninth aphorism he remarks that "convulsions take place either from repletion or depletion." Modern authors, in their endeavor to adorn their own compositions, have not hesitated to make incursions into the ancient realms of knowledge. Plethora, as well as inanition, has often been regarded as factors entering into the causes of eclampsia gravidarum. Thus, Ramsbotham remarks that such paroxysms may occur under two conditions essentially different from each other. There may be an inordinate fulness of the cerebral vessels, or there may be an opposite extreme. The same author refers to the views held by M. Andral, that an attack of convulsions may come on as a result of an excessive flow of blood to the brain, or may occur from a greatly diminished current of the vital fluid to the encephalic centres. He refers to the fact that when an animal dies from loss of blood the close of life is immediately preceded by a violent action of the voluntary muscles.

More than forty years ago M. Blot had observed that albuminuria was often attendant on the appearance of puerperal convulsions. It was considered inexplicable that primiparity was a predisposing cause. Cerebral symptoms were considered dangerous complications. The relation between the occurrence of eclampsia and that of albuminuria was regarded by M. Blot as exceedingly obscure. In regard to the cause of puerperal convulsions, there has

been much diversity of opinion. Effusion into the ventricles or into the membranes of the brain has been ascribed as a cause. Preternatural fulness of the vascular structures, or congestion of some portion of the encephalon has also been assigned as a cause. A perverted condition of the uterine nerves has been looked upon as an essential factor in the causation. The morbid irritation transmitted from the uterus to the brain has, by some operators, been deemed sufficient to excite a dangerous and even a fatal attack. Gastric, intestinal, and vesical disturbances as contributory to the cause have been mentioned. The fact that pelvic inflammation, involving the uterus and its adnexa, has followed the occurrence of puerperal convulsions, led to the hypothesis that such condition acts as a procuring, or at least as an exciting cause.

Galabin[1] maintains that albuminuria and uremia accompanying nephritis are the direct causes of eclampsia. According to his observation there is a diminished secretion of urine, and a still greater diminution in the amount of urea excreted. He regards eclampsia as a form of uremia, and the poison retained in the blood as the exciting cause of the affection. Galabin brings forward the views which have long been current, that, when after delivery the convulsions cease, there is an increased secretion of urea. He infers, as others heretofore have done, that the retention in the blood of an undue proportion of urea and other poisonous products, is the agency which gives rise to the paroxysmal seizures. In those exceptional cases in which the urine, before the convulsion, has been found free from albumin, but, after the attack, has given evidence of its presence, he considers the paroxysms may be due to a pre-albuminuric stage of nephritis. The glomeruli which are concerned in the transudation of albumin may not in acute cases be affected exactly simultaneously with the part which secretes the urea and other solids.

Barnes[2] dissents from the views of Galabin. He does not regard affections of the kidneys as essential factors of eclampsia. He admits, however, that the immediate cause of the phenomena is owing to some poison circulating in the blood; he thinks such a theory rests upon strong physiological and clinical evidence. He feels that the proof is not sufficient to warrant the statement that

[1] British Medical Journal, 1891. Also, Braithwaite's Retr., Part CIV., 1892.
[2] British Medical Journal, 1891.

urea is the active poison. He says what the kidneys ought to secrete is retained in the blood, but the noxious elements have not been clearly identified. Not wishing to commit himself to any absolute theory, he proposed the term urinemia as expressive of the intoxication to which the system in such affections may be prone. He remarks that the high arterial tension is the immediate cause of the kidney disturbance. This, in pregnancy, is often associated with cardiac hypertrophy. The weight of the heart of a woman dying soon after labor has been found by some observers to be an ounce or more in excess of the standard of eight or nine ounces. In cardiac hypertrophy which begins in early pregnancy, high arterial tension and exalted nervous sensibility may be considered as the chief underlying factor in the causation.

My own observation and experience justify me in holding to the view that high arterial tension is an important factor among the causes. There is, undoubtedly, an increased activity in all the nerve centres. That portion of the spinal cord having control of the rhythmic action of the nerves connected with the genital tract, often becomes congested or altered in its anatomical structure. The exalted sensibility into which the nervules are brought at the time that life and mobility are being imparted to the fetus, transcend in large measure that of the normal physiological state. The functions of all the organs undergo more or less alteration from the normal processes. Gastric disturbances often arise. Vomiting frequently results from seemingly inappreciable uterine displacement; from whatever cause this symptom may be due, the affection occasionally assumes an uncontrollable phase. The cardiac nerves which are given off from the par vagum, perform their functions in an irregular manner. The tissues of the heart suffer from the influence. A greater degree of vital force or of *vis a tergo* is required for the maintenance of the circulatory process. The developmental changes which take place in the uterine cavity and the pelvic structures offer marked resistance to the onward flow of the blood. The larynx, trachea, lungs, pharynx, and esophagus do not wholly escape from the excitation. The tissues of the vulvo-vaginal introitus at an early date present evidences that there are disturbing factors; these parts, from venous stasis, become discolored. The pigmental apparatus, heightened by the nervules derived from the sympathetic system, exhibit marked functional phenomena. The areolæ of the breasts

undergo a change. Moth-brown spots appear on the forehead, face, and on other parts. The functions of the urinary organs become irregular, the normal constituents of the urine undergo alteration. The secretion of the urea and other solids is, to a more or less extent, diminished; there is often existent a pre-albuminuric phase of renal inflammation or turgescence.

From a record embracing a series of one hundred cases of early pregnancy, coming under my charge, I found in a large proportion of them that the urine, examined at different intervals, presented traces of albumin. In some of the cases the urea and other solids were increased; these constituents, however, were, for a while at least, more often diminished in quantity.

In the treatment, several indications should be considered. Prominent among these should be the existence of the arterial tension and the nervous phenomena. To meet the former condition venesection has been advocated. To the adoption of this practice I cannot assent. In those cases in which phlebotomy has been attempted there has resulted, according to my own experience, no marked or perceptible diminution of the vascular spasm; the contraction of the smaller arteries and venules quickly followed the outward flow of blood, and thus obtained the same proportion of tension to the remaining volume of the circulating fluid as before. The urea and other constituents that have resisted the action of the eliminative organs should not be looked upon as the direct agents in the causation of the fatal termination, for their presence in the blood only tends to the production of spasms, which, after becoming uncontrollable, speedily exhaust or paralyze the cerebral, cardiac, and other centres; this condition leads to the untoward result. For overcoming the tension it is not absolutely essential to lessen the column of blood; it is necessary only to relax the pressure of the muscular structure of the capillaries. Prompt administration of chloroform or ether, or a combination of both agents, will often effect this. The employment of the anesthetic may be supplemented by the administration of full doses of diaphoretics. When there is evidence that the respiratory and cardiac centres have not been unduly weakened, pilocarpin, hypodermatically used, may be of much advantage. In cases in which convulsions arise before labor has supervened, or before the full term has been completed, early evacuation of the uterus affords the best chance for success.

Mrs. W., aged twenty-eight years, was seized with convulsions at the beginning of the eighth month of her second pregnancy. She had suffered for some weeks from edema of the ankles and feet. She had complained of headache and dimness of vision. Two convulsions, about an hour apart, had occurred before I was called in consultation. The paroxysms at the time of my visit had been unusually severe. Free use of ether by inhalation brought the symptoms under control. Hypodermatic use of morphine also aided materially in ameliorating the severity of the seizures. Artificial delivery was decided upon, and was attempted by resort to digital and manual dilatation; delivery was finally completed by the use of forceps. The child, though unusually small, survived. The paroxysms ceased as soon as the evacuation of the uterus was effected. The patient suffered for many months from the effects of renal complication, and from retinitis and the consequent dimness of vision. Convulsions in her next labor were prevented by early attention to the urinary secretion. During that pregnancy saline and other diuretics were employed; a complete change from an animal to a milk and vegetable diet was instituted. In two other cases seen in consultation with the late Dr. D. M. Edgerly, the delivery was hastened by the employment of forceps. In each case ether was used from the outset of the paroxysms. In one of the cases copious diaphoresis was established by the employment, in full doses, of the fluid extract of jaborandi. In both cases the arterial tension was marked, as was evidenced by the registering of the sphygmograph. The urine contained an abundance of albumin, but scarcely any solid constituents. In one case to which I was called, that of Mrs. R., the convulsions occurred at the end of the seventh month of utero-gestation. Chloroform and nitrite of amyl were employed; labor came on spontaneously, but was hastened by manual dilatation and by forceps. Both mother and child were saved. The urine contained an excess of albumin and granular casts, but no perceptible amount of urea. This patient had suffered from cephalic symptoms, and especially from retinitis and indistinct vision. In one case to which I was called, the convulsions came on for the first time four hours after the child was born. It was her second labor; there was no occurrence of this affection during her first confinement. The second labor had been severe, though a short one. There had evidently been a pre-albuminuric nephritis. Partial re-

tention of the urea, as well as the existence of high arterial tension and nervous exaltation, undoubtedly precipitated the attack. There had been scanty secretion of urine.

In another case there was marked renal trouble which continued many months; the patient was almost totally blind for upward of a year. The convulsions occurred early in the labor, but they were kept under control by the administration of croton chloral and bromides per rectum. In one case to which I was called, the paroxysms were not arrested by the termination of labor. Notwithstanding the most approved means for relief were employed, the patient lapsed into a state of profound coma and died some three hours later. In this case the secretion of urine was almost entirely suspended. Venesection was not resorted to, for there had been, on the completion of the third stage of labor, a moderate flow of blood. The cause of death must have been owing to the profound shock resulting from the inordinate character of the convulsions.

In another case, which I was to see in consultation, the patient died before my arrival. I had received, however, a specimen of the urine, which I found to consist largely of albumin; it was loaded with granular casts and débris. From the examination I had predicted a fatal result. I should say that in this case the inhalation of anesthetics was early resorted to; chloral and morphine, administered per rectum, were used. Diaphoresis and purgation were only partially accomplished.

In another case, to which I was called in consultation, the patient was aged nineteen years; she had entered into the seventh month of her first pregnancy. The paroxysms were severe and occurring at short intervals. The urine contained a large percentage of albumin; it also contained casts. Anesthetics were employed; full doses of assafetida were given per rectum. This was supplemented with the hypodermatic use of morphine sulphate. By this means the severity of the seizures was brought under control. After waiting some three hours, and finding no indication of commencing labor, it was proposed to institute artificial delivery; this measure of proceeding, however, the friends declined. The patient died some fifteen hours from the beginning of the attack. The autopsy, twelve hours after death, showed that the kidneys were in a highly congested condition; so also was the brain. There was a moderate

effusion of serous fluid found in the lateral ventricles and between the cerebral membranes. There were commencing changes in the vicinity of the thalami nervorum (the base of the optic nerve); there was also found an intense congestion and some embolic occlusion along the course of the crura cerebri, and at the anterior edge of the pons Varolii (the origin of the motores oculorum). The brain otherwise was not seriously damaged. There can be but little doubt that the cause of death was from the severe shock, superinduced by the long continuance of the convulsive seizures. I believe that the patient could have been saved had the proposition for artificial delivery been accepted.

The record of these cases illustrates, to a great extent, the benefit of an active mode of treatment. The history of the other two patients who did not recover shows that no attention had been paid to the uremic condition until labor began. In both instances the patient had complained at an early date of cerebral symptoms. There had been in each case marked edema and dimness of vision. It is fair to presume, from the excellent results achieved in other cases, that had saline diuretics and laxatives been administered in the initial stage of pregnancy, or as soon as the renal complications appeared, much might have been accomplished to have insured recovery. The diet in each case should have been regulated and should have been largely composed of milk and of farinaceous articles. Only some of the lighter grades of meats should have been allowed; all butchers' meat should have been interdicted. In a paper[1] which I presented to the section of Physiology and Dietetics at the forty-third annual meeting of the American Medical Association, held at Detroit, Mich., 1892, I spoke of the importance of such change of diet. In the same paper I gave a brief report of the case of Mrs. S., who in her first confinement had convulsions; they had been superinduced by renal complications. By careful attention to diet and to other measures during the second pregnancy, convulsions in the labor did not occur. During the third pregnancy she removed from the State and thus passed from my care; the directions I had enjoined in regard to dietetic measures were not carried out. In this third labor, I was informed, eclampsia returned, causing a fatal result.

[1] "Diet in its Relation to the Treatment and Prevention of Diseases," Journal of the American Medical Association, 1892.

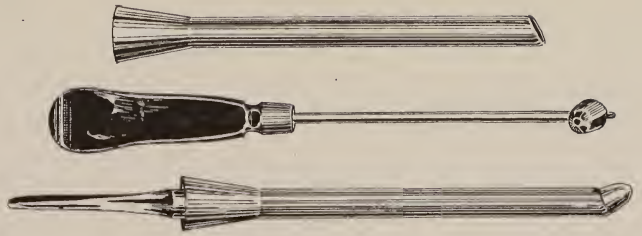
In acute cases, as before remarked, convulsions occur as the result of undue vascular tension and nervous excitation. Such exalted erethism of the ganglionic centres has, to some extent, in every case, a latent increment as preparative for the actus parturitionis. If, then, at such a time, there shall appear any adventitious factors to augment unduly the normal physiological provisional developmental changes, the energizing force resident within the hypogastric and sacral plexuses will fail to respond to the required demands, or will undergo more or less perversion in its manifestation. Its rhythmic action will in a large measure be lost or misdirected, or be imparted through the branches of the sympathetic to plexuses that control other motor muscles or the system generally.

In conducting the treatment for any case in which puerperal eclampsia is present, or is threatened, several important indications should be considered. In the cases in which much edema is present, or in cases in which renal disease is found or suspected, the preferred anesthetic, according to my experience, is chloroform. As long as there appears any tendency to a return of the paroxysms the anesthetic should be employed. In such cases sulphuric ether should be more sparingly used, owing to its too great tendency toward inducing congestion of the kidneys, which, in cases of eclampsia, are often found to be seriously impaired by disease or inflammatory changes. For inhalation, a combination of alcohol, chloroform, and ether may often be employed to advantage. This was for a long time the favorite mode of employing anesthetics by that ingenious physician, the late Dr. Charles H. Allen, of Cambridge. As a supplementary anesthetic, large doses of assafetida were formerly employed per rectum. Hydrate of chloral for such cases I have found beneficial. I prefer, however, when there is no cardiac insufficiency, the use of croton chloral; this may be employed in combination with opiates. Some of the various forms of morphine, hypodermatically used, will unquestionably be found to be the most effective of the sedative class of remedial agents. There is a serious objection in the eclamptic stage to the use of medicinal agents per rectum, for before the safe limit of the narcotic action has been reached, the presence in the rectum of foreign substances, and the disturbance caused by their application, are liable to add to the severity of the convulsions, and thus to neutralize, for the time being, the benefits their administration is expected to bring.

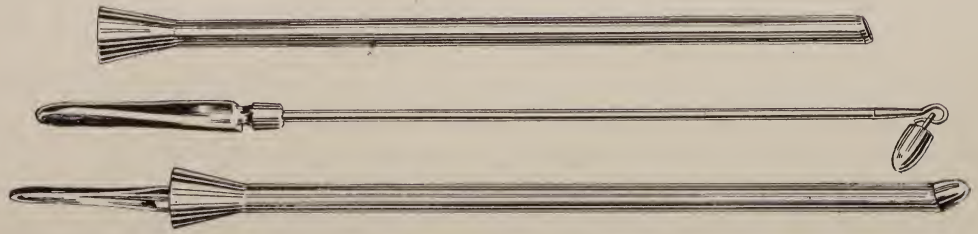
In cases of cardiac and vascular insufficiency the use of nitrite of amyl will afford much relief. Diaphoresis should always be encouraged, for besides lessening the vascular tension it will aid in the elimination of the urea and of other excrementitious products, which, when retained in undue measure, give rise to the exalted excito-motion. This condition should always be kept in view. In a case which came under my care the convulsions were at first controlled by the anesthetic use of ether; the paroxysms soon returned, and were not again overcome until the catheter was used, when, to the surprise of all, more than a quart of urine was drawn. Percussion and palpation of the hypogastric region had failed to give indication of the presence in the bladder of any considerable amount of urine; in fact, it had been observed that the bed in which the patient was reclining was drenched with urine involuntarily discharged. Cases of convulsions in which the symptoms have become persistent demand an attempt at an early evacuation of the uterus. As before remarked, digital and manual dilatation of the uterine cervix should be instituted. In cases in which dilatation cannot be effected by this means, the membranes may be punctured and the labor may be encouraged by the introduction of a flexible catheter, rendered aseptic, into the uterine cavity; the instrument may be passed in a spiral direction between the membranes and the uterine wall, and left there some hours.

Other approved means of inducing premature labor may be resorted to. In cases of severe eclampsia, the importance of emptying the uterus when abortion or labor is imminent cannot be too strongly emphasized, for when arterial and nervous tension, superinduced by pregnancy, has once been so intensified by the presence of an excess of adventitious elements appearing in the circulatory medium such as to give rise to convulsive seizures, it will rarely be found that such action takes on retrograde processes leading to recovery while the uterine tissues remain encumbered. It is only after the uterus has been freed from its charge that the nervo-arterial excitation diminishes in intensity, and the cerebral, cardiac, renal, and other centres resume, in great measure, their functional relation and their normal activities. After the eclamptic stage has been overcome, saline laxatives and cathartics will be of service. During the convulsions, counter-irritation such as sinapisms and blisters have sometimes been employed. With the use of such

applications I have often been disappointed; sometimes I have found their employment positively harmful. Cold or evaporating lotions to the head, and even ice to the spine may, for a short time, be helpful in those cases in which the patients are florid or are of full habit; in those cases, however, in which the patients are inclined to be chilly, or are anemic, the warmer applications will prove to be far more serviceable.



Endoscope for uterus.



Endoscope for male bladder.

ENDOSCOPIC TUBES FOR DIRECT INSPECTION OF THE INTERIOR OF THE BLADDER AND UTERUS.

By ROBERT T. MORRIS, M.D.,
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For direct inspection of the interior of the uterus in women, and of the urinary bladder in both sexes, I use a straight tube of thin silver-plated brass, bevelled smoothly at the entering end, and cut obliquely at that end so that a plug of brass when pushed through the tube to this point is canted to the short side as it emerges, and being fixed by the stilet on which it is carried, serves as a guide for the straight tube along curved canals. The plug removed by means of the stilet leaves the tube an endoscope. Two centimetres of the handle end of the tube are belled to become twice the diameter of the rest of the tube.

My tubes for the uterus and for the bladder in women are nine millimetres and thirteen millimetres in diameter respectively. The length, exclusive of plug and stilet, is thirteen centimetres.

The tubes for inspection of the male bladder are of the same respective diameters as the uterus tubes, but of a length of twenty-two centimetres exclusive of plug and stilet. The plug for the small diameter tubes is fifteen millimetres in length and of the same diameter as the lumen of the tube. This plug is rounded at the entering end and one-half of the shoulder at the stilet end is bevelled so that the canting of the emerging plug is greater in degree than it otherwise would be. The plug is perforated through its long axis to allow the backward escape of fluids that would otherwise be pushed ahead of it. The plug is furnished with an eye which slips loosely over a hook on the end of a stilet.

The stilet, four millimetres in diameter, is furnished with a handle one centimetre of which is of the diameter of the lumen

of the tube, so that, fitting snugly into the tube, it will steady the stilet. The stilet is long enough to hold the canted plug in place in the tube.

The tube, which is nine millimetres in diameter and twenty-two centimetres long, will usually answer the purpose of all of the tubes, but it is convenient to have tubes of more than one size.

In proceeding to examine the interior of the uterus, the cervical canal is first dilated with any proper instrument. Peroxide of hydrogen is injected to cleanse and sterilize the cavity, and the uterus then being steadied with volsella forceps, the tube with its guiding plug in place is entered to the fundus. The plug and stilet are removed, and with an ordinary head mirror light is thrown through the endoscope. By turning the endoscope properly the openings of the Fallopian tubes can be readily inspected, and then on slowly withdrawing the endoscope the whole interior of the uterus is examined. Instruments for the removal of pathological specimens through the endoscope I need not describe; nor is is necessary to refer here to the class of cases in which it would not be advisable to pull down the uterus with volsella forceps.

For examining the interior of the bladder special plans of procedure are required for the two sexes.

In women the external urinary meatus will sometimes need to be stretched a little before the endoscope is introduced. The tube, introduced to the fundus of the bladder, is held at such angle that the urine will escape as fast as it is thrown into the bladder from the ureters. In order to prevent urine from collecting dorsad of the endoscope and thus hiding a portion of the field, a spatula in the vagina is made to lift up and flatten the trigone and bring into view parts of the bladder that would naturally sag below the line of vision.

In examining the male bladder, it is usually necessary to guide the plug of the endoscope past the suspensory ligament of the urethra with one finger. The plug is removed when the entering end of the endoscope has reached the fundus of the bladder, and then, as in the female, the tube is held at an angle which will allow the immediate escape of all urine as fast as it comes from the ureters. Any flat instrument that will answer to lift up and flatten the lower wall of the bladder is passed into the rectum and manipulated with one hand while the tube is managed with the other hand. Different portions of the

interior of the bladder are inspected as the endoscope is slowly withdrawn. But if we wish to go back over a field which presents something of interest, the plug must first be reintroduced in order to prevent injury to the bladder wall, and all examining is done while the endoscope is being withdrawn or moved laterally. Such a beautiful, clear view is given of the interior of the bladder and its contents, that I do not care to use my Leiter endoscope nowadays.

VAGINAL HYSTERECTOMY FOR MALIGNANT DISEASE OF THE UTERUS: WITH A TABULATED REPORT OF CASES.

By RUFUS B. HALL, M.D.,
CINCINNATI.

The subject of vaginal hysterectomy for malignant disease is one which has excited much discussion by members of the medical profession in the past few years. Those who condemned the operation were numerous and emphatic in their denunciation of it, while those who indorsed it were as emphatic and positive in their indorsement as their opponents were in their condemnation. But at the present time the opposing factions are practically united as to the utility of the operation, and the advisability of hysterectomy for cancer is no longer questioned, with very few exceptions, by the profession at large or by specialists. An operation with a mortality not exceeding 8 per cent. has no need, it seems to me, of any discussion as to whether total extirpation is applicable to every case where cancer has been diagnosticated early. It is the operation of election when we are certain of our diagnosis.

But the question of early diagnosis is the point to be emphasized in discussing this subject, because upon it so much depends. It is this that has induced me to bring this subject before you at this time. From October 31, 1891, to May 16, 1893, a period of about nineteen months, I have made eight vaginal hysterectomies.[1] During this same period I have had referred to me for operation twenty-eight cases of cancer of the uterus in which the disease had advanced so far that I refused to operate, the broad ligaments or other organs being involved. I do not mean that total extirpation could not have been made, but the disease was not confined to the uterus, and

[1] Seven for cancer and one for complete prolapsus.

would therefore return; or, we might more correctly say, would continue. My experience in this particular quite agrees with that of other operators with whom I have conferred.

If we are to hope for good ultimate results from total extirpation of the cancerous uterus, the operation must be made before the disease has advanced to any great extent. Therefore it is of the utmost importance to our patients that we make a diagnosis of the disease early. It has occurred to me time and again, that if there could be some means devised by which the cases during this period could be seen by their family physicians earlier than they now are, many valuable lives might be saved which now are lost. But how is this to be accomplished? In the same manner that the early operation for the removal of ovarian tumor was popularized. By educating the laity, by diffusion of knowledge upon this point upon every possible occasion; it will then only be a question of time until the good work will be crowned with success. To do this will require a patient and persistent effort on the part of the family physician, as it must be conceded by all that it is he who will see the vast majority of these cases before they visit the specialist. He must educate the public mind up to the point of realizing the necessity of early diagnosis and operation if they hope to receive all the benefits to be derived from surgical science.

I am not here to find fault with, or censure the members of the profession, but to contribute my mite, if possible, to the great volume of medical knowledge for the benefit of humanity. With this object in view, we should all lay aside prejudice and many of our old ideas regarding the early diagnosis of this disease, and study it from clinical data of the present time. By doing this we will be able to master many of the difficulties of early diagnosis which have heretofore surrounded the subject. The fact that the family physician sees a case of malignant disease of the uterus in his own practice so infrequently, is inclined to make him timid and uncertain as to the correctness of his diagnosis in many cases, until he has watched the progress of disease for weeks, and in some instances months: then, alas! he realizes the fact that it is all too true—that his first suspicions as to the nature of the disease were correct, and his patient is afflicted with cancer of the uterus. By this time the disease has advanced so far that nothing can be done to relieve her. It may be said that this statement is too

broad, yet I assert that it is but a fair statement of facts, such as I have found to exist in the past and believe the same to be true at the present time.

On the other hand, I not infrequently receive a letter from the attending physician at the time of the patient's first visit, in which he says that he was first consulted by the patient in reference to her present illness a day or two before her visit to me, yet the disease has advanced too far for any radical operation to be made. The fault here is with the patient. The widespread belief in the community that women at or near the menopause are accustomed to unusual discharges, aches, and pains, and that they must not pay any attention to these, as they will all disappear when the change comes, is not a true, but a *false* doctrine, beset with many dangers to women nearing the menopause. This false doctrine was the cause of the delay in many of the late cases referred to above.

Again, not a few women in the country districts will object to the proposed examination by their physician for months, possibly until the disease has invaded other structures than the uterus, and only consent to a vaginal examination when they become alarmed by the frequent hemorrhages, at which time the disease may have advanced so far as to be hopeless. This can only be remedied by the determined effort of the family physicians' urging upon their patients between forty and fifty years of age the stern necessity of looking at once after what may appear to the patient a most trifling discharge from the vagina. It will only require a few years' time to educate the laity up to the point of realizing the necessity of early attention to these symptoms, as they now recognize the necessity of early operation for the removal of ovarian tumors. When they once understand the benefit to be derived from early diagnosis and proper treatment in these cases, and contrast it with the course of delay and death, they will present themselves to their family physicians for examination earlier in the disease than they do at the present time. Then we shall be in a position to demonstrate more fully the benefits of surgical treatment of this most dreaded and dreadful disease that ever afflicted womankind.

The clinical history of all cases coming under my observation for the first few months of the disease does not differ one from the other in a very marked degree. It is to this that I wish to direct especial attention, more particularly as we not infrequently hear the

family physician say, "Why, doctor, this cannot be cancer, for there is lacking that horrible stench which I have been taught to believe is invariably present in all cases of cancer of the uterus." "Yes," I answer, "she will have it at no distant day, and when that comes, the disease as a rule will have advanced so far that total extirpation will be out of the question, or at least a questionable operation." What we want is to be able to make a diagnosis before the disease has advanced to this point. Therefore it behooves us to look carefully after the clinical history of all women at or near the menopause, who have in their past life enjoyed reasonable health, and suddenly commence to complain of any symptoms of uterine disease.

In every instance except two in the thirty-four carefully recorded cases comprising the basis of these remarks, the first symptom to attract the attention of the patient was a slight watery discharge from the vagina, and at or about the same time a sense of weight or fulness in the pelvis, and slight discomfort in the back. This slight watery discharge continued at irregular intervals, sometimes more marked than at others; and it was several weeks, and in quite a large number several months, before other symptoms developed to attract the patient's attention. Here I wish to remark that if these cases were carefully examined at this stage there would be no difficulty in detecting malignant disease if it existed—thus giving the patient the benefit of an early diagnosis.

When the disease had advanced still further, the most prominent and constant symptom was an irregular discharge of blood from the vagina between the menstrual periods. At or about this time the patient first observed that the watery discharges commenced to irritate her person, and at times to have a slightly disagreeable odor. At this period of the disease the patient not infrequently complained of vague pain in the pelvis. Two exceptions are referred to above, both of whom said the first symptom they could associate with their disease was sharp shooting pain in the pelvis. In both of these cases the disease was far advanced when they came under the physician's observation, and no operation was made. Within three or four months after the first symptoms were observed, 50 per cent. of all the cases developed some bladder irritability. I am aware of the fact that we may and frequently do have all of these symptoms in women who do not have cancer. It is for

this very reason that there is so much danger of overlooking their true cause while the patient is in the early stages of malignant disease.

These symptoms occurring at or near the menopause, in a woman who has always enjoyed excellent or even good health as far as her sexual organs are concerned, should not only suggest to the attending physician, but demand at his hands, an early, thorough, and complete physical examination to determine whether or not the patient is a subject of malignant disease. The physician should be unusually cautious and anxious to make a correct diagnosis early, when so much depends upon it as it does in this disease. If this course were pursued in every case, we should be able to see a much larger number of cases before the disease had advanced so far that nothing could be done to save them. The following eight cases are all of the vaginal hysterectomies I have made since October 31, 1891, and are tabulated in the order of their occurrence. They all recovered, and are all living at this time, yet the three-year limit, the period at which it is conceded that they are exempt from recurrence, has not elapsed in any of the cases, and therefore it is too early for prediction as to ultimate results.

No.	Name, age, and No. of pregnancies.	Symptoms.	Diagnosis.	Date of operation.	Secured by	Family physician.	Result.
1	Mrs. W., 49 years, III-para.	Hemorrhage, pain, fetid discharge, loss of strength.	Epithelioma of cervix.	Oct. 31, 1891	Clamps.	Dr. Byron Stanton, Cincinnati, O.	Recovered.
2	Mrs. H., 47 years, I-para.	Continuous metrorrhagia for 3 months; great weakness.	Carcinoma of body of uterus.	Dec. 31, 1891	Clamps.	Dr. J. G. Semour, Troy, O.	Recovered.
3	Mrs. S., 36 years, II-para.	Hemorrhage, fetid discharge pain, general cachexia.	Epithelioma of cervix.	Apr. 11, 1892	Clamps.	Dr. Byron Stanton, Cincinnati, O.	Recovered.
4	Mrs. H, 48 years, V-para.	Fetid discharge, hemorrhage, pain.	Epithelioma of cervix.	Oct. 12, 1892	Clamps.	Dr. W. H. DeWitt, Cincinnati, O.	Recovered.
5	Mrs. A., 40 years, VIII-para.	Hemorrhage, fetid discharge pain.	Epithelioma of cervix.	Dec. 15, 1892	Clamps; closed peritoneal cavity with suture.	Dr. A. Murphy, Pleasant Plain, O.	Recovered.
6	Mrs. McC., 41 years, I-para.	Unable to walk without great pain.	Complete prolapsus of uterus.	Jan. 12, 1893	Ligatures.	Dr. R. T. Trimble, New Vienna, O.	Recovered.
7	Mrs. C., 42 years, I-para.	Hemorrhage, pain, fetid discharge.	Epithelioma of cervix.	Feb. 1, 1893	Clamps.	Dr. J. T. Behriens, Middletown, O.	Recovered.
8	Mrs. M., 52 years, III-para.	Hemorrhage, pain.	Epithelioma of cervix.	May 18, 1893	Clamps.	Dr. T. M. Wright, Troy, O.	Recovered.

PELVIC ABSCESS — LAPARATOMY: TWENTY CASES.

By I. S. STONE, M.D.,
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When specific infection extends from the vagina to the Fallopian tubes it will in an incredibly short time cause salpingitis. The next stage in the period of invasion is quite as uncertain as to time, although quite uniform in result—a closure of the fimbriæ upon each other, and an attachment of them to the ovary, or, perhaps, to some other adjacent organ, as, for instance, the intestine. Cases frequently occur where the fimbriæ are spread out over the surface of the intestine like a small placenta. This will give to the examining finger in the vagina a sensation similar to that occasioned by a pyosalpinx or tubo-ovarian abscess. Even with the finger in the abdomen this is not easily understood, as the walls of the intestine are usually greatly thickened and may be mistaken for an ovary, enlarged by suppuration or cystic degeneration.

In the complete closure before implantation we see the typical hydro- or pyosalpinx. There may be only slender attachment by a filament of adhesion of the fimbria to the ovary or intestine, and yet infection may be transmitted in this manner.

In the writer's experience gonorrhea has caused the greater number of cases of pyosalpinx and tubo-ovarian abscess. It may be taken for granted that the pus in gonorrheal cases is not so generally diffused as in pelvic abscess from puerperal infection. Even when an extensive abscess forms, reaching far above the pubis, we may confidently expect a firmer limitation of the pus, less shock from the operation, and a quicker recovery when the lesion is due to gonorrhea. Not so when the infection is a result of puerperal sepsis, for then we have systemic disease (infection) or "sapremia."

These remarks are preliminary to the subject proper of this paper on "Pelvic Abscess," which nearly always originates in this way; therefore the author, as a gynecologist, would define pelvic abscess as a collection of pus, primarily within the tube or ovary and peritoneal cavity, which has extended by rupture or otherwise to involve the peritoneum of the broad ligament, pelvic wall, uterus, intestines, mesentery, omentum, and abdominal parietes. These boundaries are always variable, but a distinction must be clearly drawn between tubo-ovarian abscess and pelvic abscess, the latter generally a result of the former, although occasionally formed by direct infection from the tube without first involving the ovary. The pointing of a pelvic abscess, as is well known to surgeons, must be due to extension of the suppurative process to the subperitoneal (cellular?) tissue, where it meets with diminished resistance, being forced downward by the development of adhesions in the upper pelvis. In dealing with these formidable pus cases one easily becomes acquainted with the facts as stated above.

In a review of these twenty operations it has been abundantly proven that these views are correct. It may be asked then, Where are the cases of "cellulitis," "parametritis," and what is their origin? When an abscess points in the vagina it may have origin in the broad ligament as a result of hematoma, as I once have seen and for which I have operated. It may spontaneously open into the rectum, as I have also seen. It may, and probably does, originate as does the abscess which follows appendicitis: first the ovary or tube adhering to the floor of the cul-de-sac, infection of the subperitoneal (cellular?) tissue, and burrowing of pus downward. In appendicitis we have almost precisely the same course—adhesions of appendix to peritoneum, extension of infection through the peritoneum, and then suppuration. There is the same amount of cellular tissue under the peritoneum in the region of the ileocecal valve as there is in the pelvis or between the layers of the broad ligament. Therefore, the amount of pus present in any case does not represent the quantity of broken-down cellular tissue, for the pus has another source entirely. I do not wish to ignore the possibility of abscesses having origin elsewhere than in the tubes and ovaries, as in psoas abscess, nor do I wish to omit reference to pyemic abscess, which may occur in any part of the body, as we see occur in the ovary, uterus, mesentery, or entirely outside the

peritoneum. The limitation of these abscesses is plainly a conservative process (encystment). Peritonitis must exist in these cases. The surgeon who regards each case as one of suppurative peritonitis will not greatly err so far as prognosis goes.

DIAGNOSIS.

It is useless to attempt in this brief paper more than a reference to diagnosis. Equally difficult would it be to ascertain the extent of pelvic suppuration without recourse to laparatomy. The experienced physician can usually determine readily the extent of suppuration by estimating its effect upon the health of the patient. It is useless to discriminate between tubo-ovarian and pelvic abscess before operation. The expert examiner will, as a rule, easily detect the presence of pus, and the competent surgeon will not care to inflict useless pain and cause further extension of disease by repeated pelvic examination after he has once satisfied himself that suppuration is present. What is still more important is this: Does the condition of the patient warrant or admit of an operation for the evacuation of pus, and, if so, by what method?

When the operation is completed and the patient is put to bed, the operator can usually give a correct opinion as to the result. When the tubo-ovarian abscess has ruptured, leaving the mesentery and intestine to form a part of the abscess wall, we may confidently expect after operation a quick pulse, great shock, and an anxious convalescence. The author does not understand the reports of easy recovery after operation for pelvic abscess. Some writers tell of "recovery without incident," "normal convalescence," "uninterrupted recovery," and the like. I am quite willing to grant that these cases recover after the first few days of shock and danger have passed, but that they have no "trouble during convalescence" is not in accord with my experience. We have marvellous recoveries, but nearly all of my cases have been rescued from death by operation, and some of them were saved after operation only by dint of hard work and plenty of it, on the part of intelligent nurses. I deny that any patient who has had a prolonged siege of suppurative disease can have a "normal recovery." The pulse will not be normal for days after operation, and the temperature, while fickle and possibly quite high or possibly subnormal, is never known

to pursue a normal course after this surgery. I do not mean that these patients do not improve from the time of operation in a certain sense, for they are in a condition favorable to improvement, but they are nevertheless ill, and are in need of the utmost care in the after-treatment.

RESULT OF OPERATION.

In twenty cases of pelvic abscess, fulfilling the pathological definition previously given and treated by radical operation, five have died. The remainder were cured and are well at the present time. This mortality, if estimated according to the prevalent custom of surgeons, is high, but taken, as the writer would have all surgical work classified, with its kind only, the mortality then appears in its true light. It is very easy to get three per cent. of mortality in some kinds of pelvic or abdominal surgery, but not in all. The writer has not observed in hospital reports any such classification as he has attempted in this paper, and has no statistics, other than his own, to which reference can be made. To compare this surgery with the usual salpingo-oöphorectomy, or even with operations for pyosalpinx, is about as rational as to quote statistics for amputation of a toe with that at the hip-joint.

SPONTANEOUS EVACUATION OF PELVIC ABSCESS; VAGINAL INCISION.

One or more cases of spontaneous rupture of a pelvic abscess have occurred in the author's experience, in which complete recovery resulted. One case in a girl of fifteen at the first or second attempt at menstruation, ruptured through the bowel—plainly a suppurating hematoma. A recent operation for pelvic abscess disclosed a large hematoma (which was due to extra-uterine pregnancy—tubal rupture). This hematoma was just commencing to suppurate and must ultimately have formed an abscess which would have opened in bowel or vagina, as it was already between the layers of the broad ligament.

Several other cases have been seen in private where the abscess pointed and was opened through the vagina, in some cases making fairly good recoveries. It is not possible just here to speak of these cases, but there is clearly no doubt as to the propriety of

opening up any abscess which points low enough to reach easily through the vagina. Two of the twenty cases herewith reported were previously treated in this manner, and, although they did not recover fully until their appendages were removed, made splendid recoveries afterward. In one of these cases the opening into the sigmoid was found, and closed, at the final operation.

The list reported here includes every case occurring in my hospital practice for two years. Not a single case was turned away or refused operation. Some of them were "forlorn hope" cases. One patient, after admission, refused operation, left the hospital, returned in a week with severe peritonitis, which vaginal incision and subsequent peritoneal flushing failed to relieve. Four of these cases were known to have resulted from an attack of gonorrhea. One had acute suppurative peritonitis at the time of operation (No. 26). Abortion is set down as the cause of suppuration in some cases, in which gonorrhea may have been present, although positive evidence was wanting. Thus far in my service all efforts to find the gonococcus have failed.

In a series of more than sixty pus cases only one death has resulted from surgery done for the result of gonorrheal infection. This death (No. 2) was due to nephritis which clearly followed upon the attack of gonorrheal cystitis. With this single exception my mortality has been from shock and in cases that had systemic infection, and, as above stated, after laparatomy for abscess following abortion or delivery at term. Fourteen of this list were white, with three deaths; six were negresses, with two deaths. I do not for a moment regret having made an effort to save those who died. In two of the fatal cases I may have precipitated the result, and think now that flushing and gauze drainage might have prolonged life. In short, "too much surgery," according to Joseph Price, may have lost the cases for me, but I cannot see why the patient should be subjected to the risk of the operation and the anesthetic, unless the source of infection—the pus sac, etc.—be removed.

Much has been written about the propriety of separating adhesions. My practice is to always do so if the patient can bear the necessary delay, not otherwise. Several of my cases are now living and in good health, who would almost surely have died of shock had an ideal operation been done. Of those who survived operation I can show very excellent results. Recovery has promptly set

in after the shock of operation has passed away. The exceptions are these: one fecal fistula, which soon closed; one, and possibly two, infected ligatures with a sinus remaining. Two of these women still menstruate many months after the removal of their suppurating and degenerated appendages. One patient has since borne a child at term (No. 6).

The following condensed histories will serve to give additional information of these cases. With one exception all were done at Columbia Hospital. Dr. Kelly, the resident physician, will furnish any information reguested in regard to them.

SYNOPSIS—PELVIC ABSCESS.

No.	Name and age.	Cause.	Result.	Remarks.	Date.
1	K. 28	Puerperal sepsis.	Recovery Peritonitis. Recovery complete.	Eight months since childbirth. Continued septicemia; disorganized appendages; intestines matted together; necrotic adhesions.	July 17, 1891
2	W.30	Gonorrhea.	Died of uremia five days after operation.	Nephritis, uremia. Abscess contained 10 oz. of pus; no peritonitis after operation.	Nov., 1891
3	S. 21	Gonorrhea.	Patient had sinus from infected ligature; still menstruates.	Had large quantity of pus both sides. Very difficult operation; quick recovery.	Nov. 23, 1891
4	A. 35	Gonorrhea for years.	Recovery.	Abscess nearly reached umbilicus.	Nov. 30, 1891
5	G. 30	Abortion, sepsis 3 months.	Died 24 hours; shock.	Operation similar to last. Patient a negress. No peritonitis.	Dec., 1891
6	G. 27	Abortion, sepsis.	Cured.	Tumor reached far above pelvis; like a fibroma uteri. Patient since gave birth to child at term.	Feb. 4, 1892
7	A. 19	Abortion.	Died on third day; bowel injured; shock; peritonitis.	The patient went down rapidly; heart weak before operation, did not recover its tone.	Feb. 17, 1892
8	H. 20	Abortion.	Recovered. Now a blooming girl in perfect health.	Left-tubo-ovarian abscess; right pelvo-ovarian abscess involving bowel.	Apr. 9, 1892
9	H. 19	Puerperal septicemia many weeks.	Slow recovery; fecal fistula; mania.	A slight girl. Very ill at time of operation. Good recovery considering critical condition; fistula gradually healed; mania for a few weeks after leaving hospital, then recovery.	Apr. 20, 1892
10	F. 24	Puerperal sepsis; purulent metritis or puncture; direct infection of omentum and intestines.	Recovered nicely after two days of critical illness.	Uterus opened during operation. Closed, packed around with gauze. Intestines much injured in separating adhesions. Many sutures required.	Apr. 30, 1892

No.	Name and age.	Cause.	Result.	Remarks.	Date.
11	G. 30	Puerperal infection; abscess of nine months' formation.	Recovered after extreme illness; morphia habit.	Gauze packing with aristol over raw surfaces. Many adventitious coats to pus sac on left side.	Oct. 12, 1892
12	W. ?	Abortion.	Recovered. Uterus remains firmly adherent to bowel, posterior surface.	This patient had spontaneous evacuation of two large collections of pus prior to operation, which was not unusually difficult.	Oct. 26, 1892
13	W.20	Recent abortion; acute peritonitis.	Died of shock second day.	Operation quickly done—thirty minutes, but should have merely flushed cavity and drained; intestines injured.	Nov. 7, 1892
14	R. 40	?	Recover'd easily. Shock feared, but did not appear.	Bowel involved and a fecal fistula expected, but did not result; less shock than in any of these cases; bore operation well.	Dec. 1, 1892
15	G. ?	Abortion ? infection.	Recovered.	Sigmoid involved. Necrotic adhesions; gauze packing.	Dec. 3, 1892
16	R. 26	Gonorrhea; acute peritonitis.	Recovered after two or three days of anxiety.	Severe shock; although operation was quickly done, she was critically ill; quick recovery after shock subsided.	Dec. 7, 1892
17	H. 35	Repeated attacks of peritonitis.	Died four hours after operation.	Morphia habitué. Did not take anesthetic satisfactorily; in constant spasm; prolonged operation.	Jan. 26, 1893
18	J. 27	?	Recovered easily	Large collection of pus had twice been evacuated by vaginal incision. Old tract found and closed.	
19	A. 29	Abortion.	Recovered. Bowel sutured in site of former opening of abscess.	Two years ill; many attacks of inflammation; very little shock followed in this case.	April 1, 1893
20	J. 32	Gonorrhea.	Recovery. Left abscess involving bowel. Sigmoid rent closed; right side less complicated.	Gauze packing; glass tube; aristol.	May 20, 1893

SUPPURATIVE APPENDICITIS.

By L. H. LAIDLEY, M.D.,
ST. LOUIS.

The history of the cases of appendicitis given in this paper warrants me in making a few remarks upon its pathology and diagnosis. Until recently the anatomy of these parts was not fully understood. Mr. Treves, in 1885, called attention to the fact that the cecum itself is entirely covered with peritoneum which, after enclosing it, is reflected upon the posterior wall of the abdomen, being continuous with the ascending mesocolon, where this fold exists. This organ lies quite free in the abdominal cavity, allowing it to enjoy various movements, owing to its structure and attachments. Rokitansky describes these as threefold: first, rotation upon its own axis; second, upon the mesentery as an axis, and third, upon other intestines as an axis. From these movements the location of the appendix will vary even in health, and especially is this true after the results of inflammation have taken place. A knowledge of this is important, especially in the primary operation, that the least time may be consumed, and that the intestines may not be disturbed; hence we find that its usual anatomical position of backward, upward, and inward is not always the position occupied by this body.

As a result of repeated attacks of inflammation, this organ is always displaced, and its anatomical structure is so confused that the greatest care is required to locate it. Kraussold, Toft, and others show that the various diseases of the cecum are but the sequelæ of appendicitis; and there are those who, with the evidence before them, claim that only as an exception to a general rule is any disease of this organ found, except as primarily beginning in the appendix vermiformis. Dr. McMurtry reported a case of stercoral colitis, with perforation of the cecum, before the American Medical Association in 1888, which can be classed as an exception to a

general rule, and I prophesy the day will come when the terms used to express the various forms of inflammation of the cecum will be supplanted by that which will express a true pathology of these varieties of the same disease.

Only upon a true pathology can we establish a true diagnosis, the principal symptoms being a localized pain, tenderness, swelling, rigidity of the abdominal wall on the right side, and other symptoms suggestive of circumscribed peritonitis in the ileo-cecal region. As long as the disease is limited to the appendix the swelling is not distinct, and if the appendix is located behind the cecum it eludes detection. Constipation and vomiting are usually accompaniments, which may confuse in making the differential diagnosis from intestinal obstruction. With a diagnosis fully made, what is the duty of the attending physician? With the pathology of this disease fully settled to be primarily an inflammation of the appendix, how shall it be treated? There has been so much said in discussing this subject, that we all feel warranted in operating in properly selected cases. *Apropos* of the former dilly-dally methods of the so-called "conservatives" in medicine, "who believed in opium, poultices, and funeral rites," we have two classes of counsel in regard to operation. The first is, that upon a real danger-signal—persistent pain, high temperature, greater or less in duration—operation should be resorted to; they also advise mild purgatives. Of the other faith are those who counsel waiting, with the argument that in reality few cases of appendicitis result fatally, and that a great majority recover under rest, poultices, and opium. A third class comes forward and advocates an operation between the attacks. Among this number are Drs. Senn and Treves. Dr. Senn also urges an operation before inflammatory adhesion takes place, while Dr. Treves believes in waiting until all inflammation and other symptoms have ceased. Dr. Senn dwells particularly upon the safety of such an operation.

Mr. Treves says: "I have excised the appendix in a large numnumber of cases, and up to the present time have to record no deaths as resulting from the operation." In the light of the following cases, I believe that to wait is jeopardizing the lives of our patients; that Dr. Senn's position is the correct one—to operate early, before adhesion takes place, although inflammation exists, and not to wait for a recurrence, as Dr. Treves would advise. Discussion

has been going on as to the best methods of operation upon these cases, the proper line of incision, as to whether drainage should be employed, etc. Certainly there can be no fixed rules in every case, for we rarely find the same conditions to deal with. An incision should be made that will expose the parts to be operated upon, and not injure any part that should be protected. As to the drainage-tube, it should be employed where it will save life. Mr. Tait says it decreases his mortality from 10 to 25 per cent. This may not be ideal, but it is common sense, and it is profitable both to the surgeon and the patient.

In illustration of this topic I report the following cases:

Case I.—Mrs. B., aged twenty-nine years, married. Has one child living; two miscarriages. Had been in good health prior to six weeks before I was called. During that time she had been attended by three prominent physicians. She gave the following history: was taken with a severe pain in the right inguinal region, the pain disseminating from McBurney's point toward the umbilicus, and extending as far as the gastric region, attended with nausea, constipation, and unbearable suffering within that time. She had been informed by the first doctor in attendance that she was pregnant. She called a second, a prominent gynecologist of this city (St. Louis), who, passing his hand over the distended abdomen, told her she had womb trouble, and to come to his office the following Wednesday and he would treat her, and instructed her to have leeches applied over the abdomen, which was done. The ecchymotic points at the time I operated upon her, showed the ravages of these animals upon this poor sufferer. I examined her on April 1, 1891, at her home. She then had a temperature of $103\frac{2}{5}°$, pulse 119, weak and irregular. Her senses were blunted, she being in a moribund state, caring little as to what was going on. The abdomen was distended from the pubic arch to the margin of the liver, the right side being greater than the left. Upon percussion there was dulness over the right side of the abdomen. Fluctuation was noticed over the greater part of the right side, extending posteriorly.

She was sent to the Protestant Hospital that night, and early the next morning I operated for suppurative appendicitis. An incision four inches long was made along the outer line of the rectus muscle, which allowed the escape of one gallon of pus. It was so eager to

Photograph of appendix vermiformis taken from the large pus sac in the case of Mrs. B. (Case I.), showing the necrotic appendix with a sheet of peritoneum to which it is attached, all of which was walled off from the peritoneal cavity by a plastic inflammation.

escape that as soon as the knife entered the cavity it spurted out a great distance, and was exceedingly offensive. Over the region of the cecum, and within this immense sac outside of the peritoneum, with the skin and fascia making its outer covering, I removed the necrotic appendix vermiformis adhering to a thin sheet of peritoneum, which is shown in the plate, made from a photograph. I submitted the specimen to Dr. D. V. Dean, who pronounced it the appendix with its hardened secretion in its lumen. The cavity was very extensive, the pus burrowing from the pubic arch to the line of the liver and back of the kidney, at which point a counter-opening was made for more complete drainage. The parts were washed with 1 : 1000 bichloride solution, afterward with hot Thiersch's solution once or twice a day, until the cavity began to fill up and heal. The patient made a very slow recovery, being confined to her bed for two months, when she was able to move about the house for the first time. She recovered with an enormous ventral hernia in the right lumbar region, owing to the destruction of the muscular tissue from the long retention of pus in that region. I proposed an operation for its cure, but I am doubtful if much good can be accomplished by such procedure, because of its extent.

Case II.—Miss R., aged twenty years, student at the High School, had enjoyed excellent health prior to her present attack of pain, which began the day before my first visit, July 28, 1891. The pain began with a distinct chill ; had no former attacks of a like character. Her temperature was $100\frac{1}{5}°$; pulse 100, full and hard. The pain was located over the region of the cecum, extending backward and upward, and was attended with vomiting and increased pain. The right lower extremity was drawn up and held in that position to give relief. I announced the diagnosis to be appendicitis, and urged immediate operation. The widowed mother demurred, and after a time refused me the privilege of an operation. I ordered saline cathartics, chloral, with extract of hyoscyamus, to relieve pain, with hot poultices over the parts affected. The temperature ranged continually from 101° to 103°, with increased frequency of pulse until the sixth day, with a slight bulging over the region of the cecum, and with conjoined touch I discovered a fluctuating tumor in the region of McBurney's point. I announced to the mother that unless I had my way of treating the case I would withdraw and allow her to call someone else. I was then permitted to operate,

and made an incision along the rectus muscle, developing a sac of pus which contained about eight ounces, which was removed with the débris of the appendix vermiformis; also a specimen of an enterolith, weighing about ten grains, which had dropped down into the blind pouch, causing plastic inflammation, ulceration, and perforation, and the formation of the cavity outside of the peritoneum. The wound was rendered antiseptic and carefully drained, which allowed the patient to make a speedy recovery, and she now enjoys uninterrupted good health.

Case III.—Mr. K., aged twenty years, had been ill for six weeks, supposedly with typhoid fever(?). He had been under the care of a prominent homeopath, and finding that he did not get any better, I was called in August 12, 1892. I found the patient with a history of pain, beginning in the region of the cecum, accompanied with fever, alternating with rigors. I could not get a satisfactory history of the case up to that time, but on examination I found the tumor in the *left* inguinal and hypogastric region to the left of the bladder, in front of the larger bowel. By conjoined touch, which was made under an anesthetic, I could feel a round, fluctuating tumor about three inches in diameter. All the organs of the body were normal. The bladder was emptied; the lower bowel was washed out with an enema. With the previous history, the pain beginning over the region of the cecum, fever accompanied with rigors, I made out a diagnosis of suppurative appendicitis.

On the following day I made an incision over the tumor, beginning over the middle of Poupart's ligament, extending upward about four inches, opening the abdominal cavity and exposing a glutinated mass of omentum low down in the cavity, which was an indication of the location of the sac of pus. This was broken into by the finger, and the cavity thoroughly opened; it was walled off by a plastic inflammation. The pus was washed out by a liberal use of sterilized hot water. The sac evidently was formed by the burrowing of pus from the region of the appendix vermiformis, and had formed a depot at this point. After thoroughly cleansing the parts, an iodoform-gauze packing was introduced into the lower angle of the wound, which was retained until the following day, when it was removed, the cavity flushed with sterilized water, and a drainage-tube introduced and allowed to remain until the third day, when it was removed. The patient made a speedy recovery,

suffering from an extravagant varicocele, evidently due to pressure upon the spermatic veins, arising from injury to those parts during the operation. He has entirely recovered from that affliction, and enjoys excellent health, with no evidence of a recurrence of the disease.

Case IV.—Mr. Jos. W., of Dallas, Texas, was taken ill for the third time on September 9, 1892. He had been treated at each time for acute appendicitis, the treatment being applications of ice over the region of the inflammation, with saline cathartics, etc. At the time I was called, he had the well-marked symptoms of pain over the region of the cecum, but more especially did he suffer from pain in the stomach. He had been given a hypodermatic injection of morphine, which helped to obscure the symptoms—a most pernicious custom. I ordered saline cathartics with chloral, to relieve pain, and hot applications over the abdomen, and had the patient removed to the Protestant Hospital the following day. His pulse ranged from 88 to 100, temperature from 100° to 102°. On September 13th I opened the cavity over the cecum, carefully dissecting the tissues to avoid the peritoneal covering until it was determined there was no sac formed outside of the peritoneal covering. When the abdominal cavity was opened a somewhat unusual condition was shown. The cecum was movable, and on being lifted up it was discovered that a thick fold of omentum was adherent to its wall, posteriorly forming a sac which contained pus and the remains of the appendix vermiformis, a portion of which remained, showing the character of that organ. The adherent omentum was carefully detached, and that part which had become necrotic was tied and cut off. The cavity was washed out with warm sterilized water, the opening packed with iodoform gauze, which was removed on the following day; the cavity again being cleansed, a smaller packing of gauze was introduced. From this time the patient made an uneventful recovery, since which he has been in perfect health.

Case V.—Mr. T., aged forty-nine years, healthy, except occasional attacks of indigestion, causing pain in the right inguinal region. Had in the past six months two other attacks of pain, which had passed off after he had taken a dose of castor oil and laudanum, followed by rest for a few days. I called to see him for the first time September 21st. His pulse was 100, full and hard; temperature 101°; pain in back and side, chiefly in the region of the cecum. He had taken paregoric for the past two days, and

was fully under its influence when I examined him. I continued to visit him, ordering saline cathartics and chloral to relieve pain. On the 23d I discovered, for the first time, dulness over the region of the cecum; on the 24th he was placed under the influence of an anesthetic; an incision was made over the most prominent part of the field of dulness, cutting into a sac of pus which was small, containing not more than one or two ounces with the débris, composed of the broken-down appendix vermiformis. The sac was washed out with a hot bichloride solution, and the cavity packed with iodoform gauze; this was the beginning of a speedy recovery, that took place within the following six weeks.

Case VI.—Mr. R., aged sixteen years, student, had enjoyed excellent health until his attack, three days before I was called to see him, August 26, 1892, giving me the following history of pain in the right iliac region, with range of fever from 100° to 103°, pulse 85 to 104. On the fifth day, a tumor the size of an orange was discovered by conjoined touch, which prompted an operation the following day. The patient had been treated with cathartics, pain relieved by chloral hydrate, and hot applications over the inflamed surfaces. On the sixth day an incision was made over the tumor, which was opened, and about six ounces of pus evacuated. The cavity was packed with gauze, allowing free drainage. The patient made a speedy recovery, since which time no recurrence of the disease has made its appearance.

Case VII.—Mrs. L., colored, aged twenty-three years, came to the outdoor department of the Protestant Hospital some time in 1892. She suffered great pain over the region of the cecum, which continued for about a week. I did not see her for about four or five days after her first visit. I was called to see her in great suffering, and upon examination I found a dulness over the region of the cecum, and by conjoined touch I could feel a fluctuating tumor. I made an incision in the usual line, opening into a cavity of pus which was discharged, the parts washed out as well as the surroundings and circumstances would allow, the cavity packed with gauze which was removed on the second day, and again dressed. The patient made a good recovery, notwithstanding she was surrounded with filth and poorly fed.

Case VIII.—Miss T., aged twenty-two years, sister of a West End physician. I was called to see her late in the fall of 1892,

and found her suffering from pain in the right inguinal region, beginning at McBurney's point and extending over the abdomen. She had fever, with a temperature of 101° to 103°, pulse 110 to 120, weak and irregular. She suffered with nausea, vomiting, and constipation. I could, by percussion, notice a dulness over the region of the cecum. I made a diagnosis of appendicitis, and urged immediate operation. The family would not consent to it. Afterward I learned from her brother that she had passed quantities of pus in her stools. She continued to have fever, and in a fortnight she was taken with a violent attack of phlegmasia dolens. I was called to see her again when she was removed to the Protestant Hospital for treatment. The circumscribed dulness over the cecum had disappeared. The pus evidently had burrowed under the peritoneum to the region of the left saphenous vein, which had produced obstruction of that vessel, causing the phlegmasia dolens, leaving the poor, suffering patient in a most deplorable septic condition. The fever did not abate up to the time she left the hospital, which was three months from the first time I saw her. I hope, but cannot believe, that she will enjoy health, even if she does not perish from this unfortunate condition brought about by this disease, and especially since she was denied the only remedy—a surgical operation—which in my opinion offered her the only hope of health or security from death.

Conclusions: That the symptoms attending this disease are as distinct and definite as any other affecting the abdominal region, and mistakes in diagnosis should be an exception; that after a diagnosis is made it becomes purely a surgical case, and as such it should be treated, such methods of operation being used for the removal of the causes of the disease—namely, by removal of the appendix; that drainage should be employed in cases where pus is likely to jeopardize the life of the patient; that the earlier the operation is made the safer it will be to the life of the patient, as well as to protect the same; above all, the public should be enlightened, and a proper estimate placed upon the danger of this disease, and surgical interference as the only rational treatment.

George Jackson Fisher, M.D.

IN MEMORIAM.

GEORGE JACKSON FISHER, A.M., M.D.[1]

By WILLIAM WARREN POTTER, M.D.,
BUFFALO.

Dr. George Jackson Fisher, an Honorary Fellow of this Association, died at his residence in Sing Sing, N. Y., February 4, 1893, from septicemia contracted while performing an amputation for an injured limb on January 13, 1893. During the operation he had the misfortune to inflict an accidental wound upon his thumb, and in a few days his hand began to swell and sepsis became established. Dr. Fisher had been for several years afflicted with diabetes, so naturally his vitality was considerably lowered and proved insufficient to carry him through such a terrible ordeal. He was one of the most accomplished men of his time, and had collected a large library filled with quaint and curious literature, which was often sought by literary men.

He was born in Westchester County, November 27, 1825, and was descended from early Dutch settlers whose original name was Vischer. His father removed to the central part of the State of New York and engaged in agricultural pursuits when the subject of this memoir was but eleven years old. Dr. Fisher was accustomed to allude to his life on the farm as having given him his great fondness for natural history.

He began the study of medicine under Professor Nelson Nivison, of Syracuse University, who was then practising medicine at Mecklenburg. His first course of lectures was attended at Buffalo at

[1] For much of the data of this memoir I am indebted to an obituary of Dr. F. by Dr. Joseph H. Hunt, of Brooklyn, N. Y., published in the Trans. Med. Soc. State of N. Y., 1893.

the time when James Platt White, Austin Flint, Sr., and Frank Hastings Hamilton, who were founders of the Medical Department of the University of Buffalo, were then in their prime and were fast making themselves the most celebrated medical teachers in America. From the Buffalo college he went to New York, and entered the University of the City of New York, where he was thrown into relationship with such men as Valentine Mott and John W. Draper, as well as other great luminaries of medical science. He graduated in 1849 and began the practice of medicine in partnership with his preceptor at Mecklenburg, whence, in 1851, he removed to Sing Sing, where he continued in active professional life until the day of his death. He was buried in Dale Cemetery with all the honors that a loving family, a devoted *clientèle*, intimate friends, neighbors, and contemporary physicians could bestow upon his mortal remains.

In his library Dr. Fisher had collected over four thousand bound volumes and more than three thousand pamphlets, and in this he was accustomed to spend his leisure moments, where he delved into the literature of ancient medicine and made himself a master of its curious history. He was accustomed to invite his friends and even acquaintances to come to his home and to take possession of his library to their utmost desire; and one could hardly imagine a prettier picture than this genial physician—who, though a gentleman of the old school, yet was modern in all his knowledge and practice, and who enjoyed the society of the young and middle-aged—sitting in his library with his friends around him and these thousands of volumes surmounting his book-shelves. It is asserted that there is no private collection of medical classics equal to the one that Dr. Fisher has grouped, including, as it does, a large series of works illustrating the development of anatomy, surgery, materia medica, and medicine from the earliest period to the present time. He had collected works pertaining to the history of medicine on a most extensive scale, and especially was his library rich in the biography of physicians and surgeons of both ancient and modern times.

Only a few months before his death he had finished illustrating his copy of Dr. Samuel D. Gross's autobiography, to which he had added over four hundred illustrations and forty autographic letters, increasing the size of the work to four thick volumes. His collec-

tion of engraved portraits of celebrated physicians, surgeons, anatomists, and medical authors is probably the most complete in existence, and one in which he took special pride, enabling him, as it did, to become acquainted with the physiognomies of the friends with whom he was in daily converse through their works that adorned his shelves.

Dr. Fisher had been to great expense in collecting the bibliography of teratology, a subject on which he had bestowed special attention, as is suggested by the valuable papers on the subject which he contributed to the *Transactions of the Medical Society of the State of New York.* He had in preparation at the time of his death a work on this subject, the material for which he had been gathering together all these years. He had just completed and made ready for the printer a work on the old masters of the healing art, a subject upon which he had written much and studied more, as the pages of periodical medical literature of the past decade abundantly show. He had also made a collection of medical medals, consisting of about four hundred and fifty, at a cost of nearly or quite $1000, on the subject of which he was preparing a lecture that he was to have delivered before one of our numismatic societies a few days before his death.

Dr. Fisher was a typical surgeon, cleanly in person, neat and simple in his attire, attending to every detail with precision and exactitude, and was called upon either as a consulting or operating surgeon throughout a large region of the country near his residence. He had made most of the major operations of surgery, including amputations, brain surgery, ovariotomy, Cesarean section, removal of uterine fibroids, and ligation of the carotid artery.

Among the honors that he had received may be mentioned that of the degree of A.M., conferred in 1859 by the Madison University; vice-president (1864), president (1874) and permanent member of the Medical Society of the State of New York; member of the American Medical Association; corresponding member of the Boston Gynecological Society; member of the New York Academy of Science; corresponding member of the New York Historical Society; vice-president of the American Academy of Medicine; Fellow of the New York Academy of Medicine; Fellow of the New York Medico-legal Society; Honorary Fellow of the American Association of Obstetricians and Gynecologists; physician and

surgeon for the State Prison for males and females at Sing Sing; for twenty years a brigade surgeon in the New York State National Guard, and for a like period United States examining surgeon for pensions. On several occasions he served as volunteer surgeon in the United States Sanitary Commission after the great battles of the war, and as medical director of a floating hospital.

His contributions to medical literature have been numerous, among which may be mentioned the following: *Biographical Sketches of Physicians of Westchester County*, 1861; *On the Animal Substances Employed in Medicine by the Ancients*, 1862; "Diploteratology, or an Essay on Compound Human Monsters," *Transactions of the Medical Society of the State of New York*, 1863–68, inclusive; "A Brief History of the Discovery of the Circulation of Blood," *Popular Science Monthly*, July 18, 1877; "Teratology," *Johnson's Universal Cyclopedia*, vol. iv.; "The Influence of the Maternal Mind in the Production of Malformations," *American Journal of Insanity*, vol. xxvi., July, 1870; "A Series of Sketches of the Lives and Works of Some of the Old Masters of Anatomy, Surgery, and Medicine, consisting of Twenty Sketches," *Annals of Anatomy and Surgery*, vols. ii. to viii.; "History of Surgery," *International Encyclopedia of Surgery*, 1866, vol. vi., New York; "The Medical Men of Westchester County," and "The History of the Town of Ossining," in Scharf's *History of Westchester County, N. Y.*, Philadelphia, 1886.

This sketch, though very imperfect, cannot better be closed than by quoting from an editorial in the *Annals of the Anatomical and Surgical Society*, 1890, vol. ii., presumably written by Dr. Edward Seaman Bunker, and in which Dr. Fisher is supposed to be the country doctor alluded to:

"Some fifty miles from New York city there lives a country doctor whose gig has rattled over the stones and ploughed through the mud of the vicinage for more than a quarter of a century. He still toils day and night at the vocation in which he has grown gray; he will never grow old. He started poor; probably he is not yet rich in worldly pelf. Yet the success of his life is such that it would satisfy the reasonable ambition of any man. The visitor knocking at his door will be welcomed by a broad-shouldered, genial scholar, who takes his guest to his heart when he gives him his hand, and opens wide to him the portals of a mansion where

simplicity vies with elegance, and all domestic graces flourish in a Christian household. To develop such a home were success enough for any man. But yonder is another and larger building. It is the fire-proof library and laboratory, where this man proves to the world, after a fashion of his own, that a country doctor has no time for scientific pursuits, no stimulus, no fellowship. Here are thousands of rare and priceless volumes, collected, arranged, and mastered by this country doctor. How could he have found time for all this? But this is not all. Upstairs, in a spacious hall, cabinet after cabinet is filled with collections of shells, of minerals, of skeletons, of pathological specimens, thousands and thousands of objects of scientific interest, grouped, studied, and remembered by this country doctor.

"But this is only the by-play of his life. Year after year he sits at his desk in the half-hours that he can save out of the day's turmoil, and, looking out upon the noblest of rivers and the fairest of scenery, he thinks out the great work of his career. Every year adds a few pages to the book, and each decade shows that he may hope to see his masterpiece completed."

INDEX.

Abdominal incision, a plea for better surgery in closure of, 182
Abdominal incision, management of, 202
Abscess, pelvic, 283
Appendicitis, suppurative, 290
Armstrong, Oscar Samuel, 17, 216
Asdale, William J., 17
Ashton, William Easterly, 17
Asphyxia, intra-uterine, 53

Baker, Washington H., 17
Banta, Rollin Ledrue, 17
Barrow, David, 17
Bernardy, Eugene Prosper, 18
Blume, Frederick, 18
Boise, Eugene, 18, 129, 231, 261
Bond, Young Hance, 18
Boyd, James Peter, 18
Branham, Joseph H., 18
By laws, 5

Cameron, Irving Heward, 18
Carstens, J. Henry, 18, 32, 102, 106, 109, 127, 141, 177, 212, 213, 214
Central laceration of perineum, 224
Cervix, dilatation of, for dysmenorrhea, 97
Clarke, Augustus Peck, 18, 265
Conklin, William Judkins, 19
Constitution, 3
Cordier, Albert Hawes, 19
Cushing, Clinton, 19
Cushing, Ernest Watson, 19

Davis, William Elias B., 19
Dean, George R., 19
Dewees, William B., 19
Dorsett, Walter B., 19
Douglas, Richard, 19
Duct, common, obstruction of, 146

Duff, John Milton, 20, 85, 89, 232, 259, 262, 264
Dunning, Lehman Herbert, 20
Dysmenorrhea, dilatation of the cervix for, 97

Eclampsia, puerperal, 265
Executive sessions, minutes of, 39
Extra-uterine pregnancy, 114

Fellows, corresponding, 15
Fellows, honorary, 11
Fellows, ordinary, 17
Fenger, Christian, 20
Fisher, George Jackson, obituary notice of, 299
Frederick, Carlton C., 20

Gall-bladder, surgical pathology of, 142
Gibbons, Henry, Jr., 20
Glasgow, Frank A., 20
Green, J. J., 261

Haggard, William David, 20
Hall, Rufus Bartlett, 21, 278
Haynes, John Rudolph, 21
Hemorrhage, surgery in intra-pelvic, 163
Hill, Hampton Eugene, 21
Hoffman, Joseph, 21
Holmes, Josus Billington Sanders, 21
Howitt, Henry, 21, 216
Hughes, Donnel, 21
Hulbert, George Frederick, 21, 53, 83, 88, 95, 111, 174, 211, 239, 243
Hypes, Benjamin Murray, 21
Hysterectomy, pregnancy following partial, 235
Hysterectomy, vaginal, 278

Ill, Edward Joseph, 22
In Memoriam, 299
Insane, operations on the, 245
Intra-pelvic hemorrhage, surgery in, 163
Intra-uterine asphyxia, 53

Jarvis, George Cyprian, 22
Jelks, James T., 22
Johnston, George Ben, 22

King, Willis Percival, 22
Krug, Florian, 22

Laidley, Leonidas Hamlin, 22, 157, 161, 290
Laparatomy, 283
Legal question in operations on the insane, 245
Leonard, C. Henri, 262
Longyear, Howard Williams, 22, 103, 106, 107, 161, 182, 218, 220
Lothrop, Thomas, 22

Macdonald, Willis Goss, 23
McArdle, Thomas Eugene, 23
McColl, Hugh, 23
McMurtry, Lewis Samuel, 23, 37, 43, 108, 109, 213, 217, 218
Management of abdominal incision, 202
Manton, Walter Porter, 23, 142, 161, 245
Marcy, Henry Orlando, 23
Maxwell, Thomas Jefferson, 23
Michael, J. Edwin, 24
Miller, Aaron Benjamin, 24
Miller, Alfred Beckett, 24
Miller, Joseph Sylvester, 24
Minutes of sixth annual meeting, 31
Montgomery, Edward Emmett, 24
Morris, Robert Tuttle, 24
Myers, William Herschel, 24

Nature of shock, and its management, 129
Nevitt, R. Barrington, 24

Obstruction of the common duct, 146
Officers for 1893–94, 9

Paine, John Fannin Young, 24
Pathology of placenta previa, 67
Pearson, William Libbey, 25
Peck, George S., 25, 114, 128
Pelvic abscess, 283
Pelvic disease and psychical disturbances in women, 249
Pelvic surgery, the present status of, 43
Perineum, central laceration of, 224
Peterson, Reuben, 25
Placenta previa, pathology of, 67
Pond, Edmund M., 25, 97, 113
Porter, William, Jr., 25
Potter, William Warren, 25, 81, 88, 106, 109, 126, 299
Praeger, E. Arnold, 25
Pregnancy, extra-uterine, 114
Pregnancy following a partial supra-pubic hysterectomy, complicated by hemorrhage through the abdominal cicatrix, 235

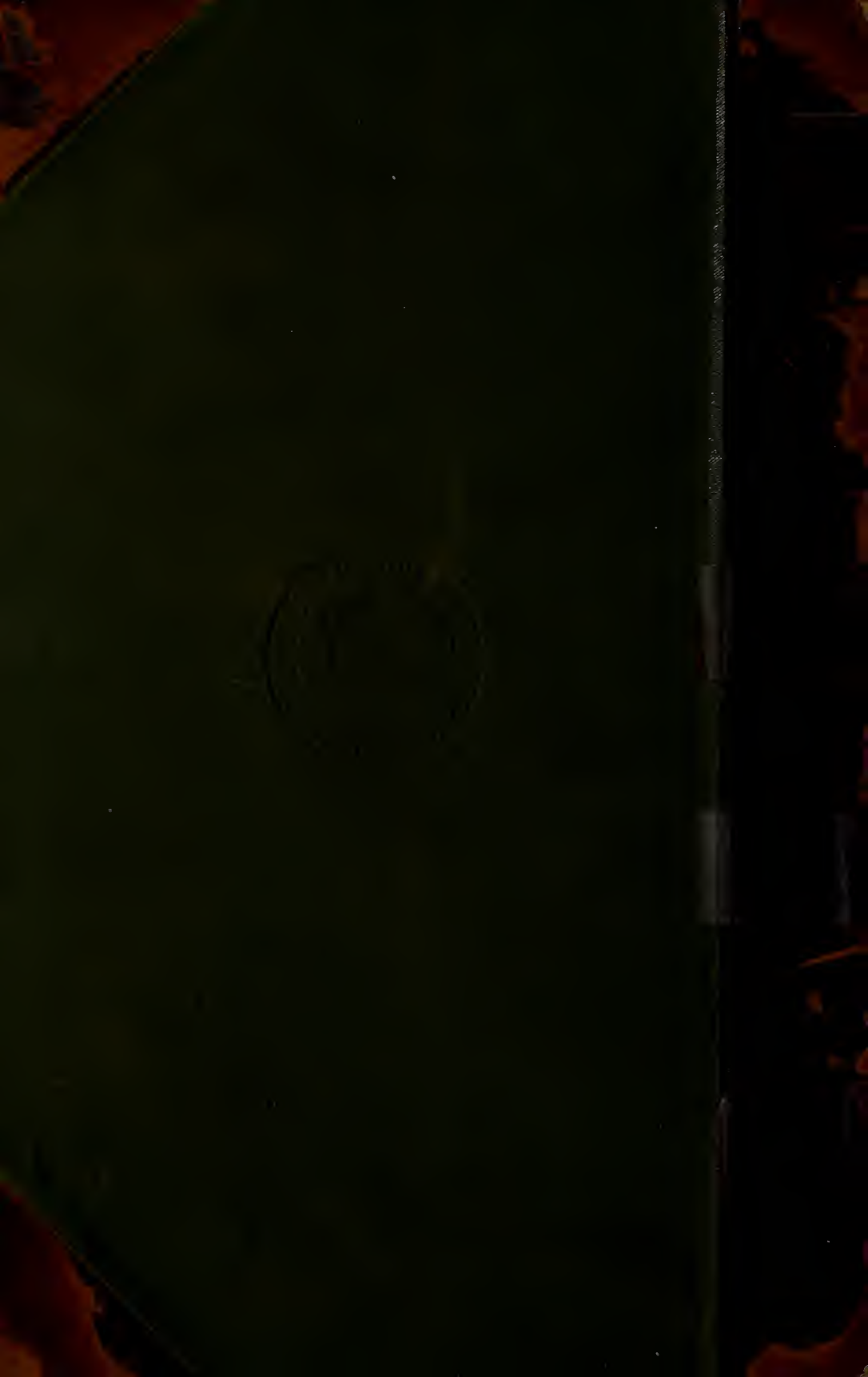
Pregnant women, care of, 89
President's annual address, 43
Price, Joseph, 25
Puerperal eclampsia, 265

Reed, Charles Alfred Lee, 26, 158, 173, 202, 222, 242, 243, 244, 258, 263
Ricketts, Edwin, 26
Robinson, William Lovaille, 26
Rohé, George Henry, 26, 33, 38, 214, 249, 258, 262, 263, 264
Rosenwasser, Marcus, 26, 96, 107, 127, 163, 178, 215, 232, 244
Ross, James Frederick William, 56, 80, 83, 88, 105, 106, 124, 127, 146, 161, 172, 210, 213, 220

Sexton, John Chase, 26, 87, 177, 224, 234
Seymour, William Wotkyns, 26
Shepherd, George Rubens, 27
Shock, nature of, 129
Smith, Charles N., 27
Stanton, Byron, 27
Stone, Isaac Scott, 27, 283
Storrs, Melancthon, 27
Suppurative appendicitis, 290
Surgery in intra-pelvic hemorrhage, 163
Surgery, pelvic, present position of, 43
Surgical pathology of gall-bladder and ducts, 142

Taylor, William Henry, 27
Technique in closing an abdominal incision, 182
Thomas, George Gillett, 27
Townsend, Franklin, 27

Uterus, malignant disease of, 278

Vaginal hysterectomy for malignant disease of uterus, 278
Vander Veer, Albert, 27

Walker, Edwin, 28
Ward, Milo Buel, 28
Wenning, William Henry, 28, 67, 81, 83, 85, 87, 88
Werder, Xavier Oswald, 28, 96, 112, 181, 235, 244
What are the indications for abdominal section in intra-pelvic hemorrhage? 163
Winn, John Farmer, 28
Women, care of pregnant, 89
Women, pelvic disease and psychical disturbances in, 249
Wright, Adam Henry, 28